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SYPHILIS AND PREGNANCY

AN ANALYSIS OF THE OUTCOME OF PREGNANCY IN RELATION TO TREATMENT IN 943 CASES

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The presence of an untreated syphilitic infection in the pregnant woman greatly reduces the chance of the birth of a normal baby. As a result of the widespread application of serologic tests to the diagnosis of clinically unrecognizable syphilis and the almost universal use of arsphenamine or related products in the treatment of the disease, there has occurred a striking decrease in the incidence of fetal and infant mortality due to syphilis. The accumulated experience of many workers with the newer methods of treatment has made it evident that congenital syphilis is an almost entirely preventable disease and that one of the most fruitful fields of preventive medicine is open to the obstetrician. Although these main facts are well known, certain of the minutiae of treatment require more detailed elucidation.

In this paper the records of nearly 1,000 pregnancies occurring in syphilitic women are analyzed with regard to the effects of the disease on the product of conception and the results achieved by antisyphilitic treatment. The study has made it possible to offer definite statements as to certain controverted points, such as the relative value of the Wassermann reaction and placental histology, the optimal amount of arsphenamine to be administered during pregnancy, the efficacy of the heavy metals, and the value of preceding antisyphilitic treatment during subsequent pregnancies in which no treatment is given.

SOURCE OF MATERIAL AND METHOD OF STUDY

The basis for this study is afforded by an analysis of the outcome of 943 pregnancies in known syphilitic women delivered under the supervision of the obstetric department of the Johns Hopkins Hospital. All pregnancies occurred between the years 1914 and 1930, inclusive, a period corresponding roughly to that during which the arsphenamines have been generally employed in the treatment of syphilis. Pertinent data have been obtained through the departments of obstetrics, pathology, medicine (syphilis clinic), pediatrics and roentgenology. For each pregnancy, information on the following points has been assembled when available: result of syphilologic examination of the mother and the kind and amount of antisyphilitic treatment received by her before or during pregnancy; duration of pregnancy at the start of treatment; condition of the child at birth; result of the Wassermann test on the blood of the umbilical cord; microscopic examination of the placenta; follow-up examination of the child in the pediatric clinic; roentgen examination of the baby for syphilitic epiphysitis, and the postmortem observations if the infant was still-born or died soon after birth.

The 943 pregnancies comprising the study occurred in 644 women, each of whom was infected with syphilis prior to delivery. Of these, 78 belonged to the white race and 566 to the Negro race; all were among the public ward class of patients. Each patient was submitted to much the same routine. On admission to the obstetric clinic a Wassermann test on the mother's blood was made, and, if found to be positive or if there was other evidence of the existence of maternal syphilis, the patient was referred to the syphilis clinic for further examination and antisyphilitic treatment when indicated. In many instances, patients presented themselves to the obstetric clinic for the first time during labor. Among this group were 117 women, accounting for 124 pregnancies, who did not reach the syphilis clinic before delivery. The duration of pregnancy at the start of treatment is expressed in terms of lunar months, ten lunar months being accepted as the normal period of gestation. The diagnosis of premature delivery is based on weight and length measurements of the child as outlined in Williams' "Obstetrics."[1] The definition of children born alive or born dead follows the usual criterion, in that infants who breathe are recorded as living.

Approximately three fourths of the children surviving the first weeks of extra-uterine life were later examined by the pediatricians for clinical and serologic evidences of syphilis. In the tabular presentation of our material the ultimate status of the child is recorded as normal or syphilitic, on the following basis:

A child is classed as normal only if it is born alive and found on subsequent pediatric examination (usually including routine roentgen examination) to show no evidence of syphilis. The relationship of normality to the duration of pediatric follow up will be discussed subsequently. Children showing unmistakable signs of the disease, pathologic, roentgenologic or clinical (including serologic), are recorded as syphilitic. Under a third classification, "no data," were placed all cases presenting insufficient evidence on which to make a diagnosis either of "normal" or of "syphilis." The group designated "no data" included still-born children in whom postmortem and roentgen examination was negative, babies apparently healthy but not followed in

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1. Williams, J. W.: Obstetrics, ed. 5, New York, D. Appleton & Co., 1923, p. 714; 1930 edition, p. 167.

the clinic, and cases in which clinical, pathologic or roentgenologic evidence was questionable. It is assumed that the absence of discoverable changes at autopsy does not necessarily indicate the absence of infection with syphilis. Maceration alone was not considered sufficient evidence for a diagnosis of syphilis. Approximately one third of all infants belong to the "no data" group. In the accompanying tables this group has been omitted for, while among these are of course both syphilitic and normal children, it is a fair statistical assumption that the proportions of each found in the known groups would also be preserved in the unknown groups; and the trend is thereby unaffected.

CRITERIA OF DIAGNOSIS IN THE INFANT

When a living child is born of a syphilitic mother, treated or untreated, it is of paramount importance to determine as promptly as possible whether or not the child is infected. Five methods of examination are available, in order of their time relationships to birth, as follows: (1) dark-field examination of the umbilical cord vessels, which may be performed within a few minutes of delivery; (2) the cord Wassermann test, requiring from twenty-four to forty-eight hours for a result; (3) microscopic examination of the placenta, the rapidity of reporting depending on the expedition of the pathology laboratory but requiring several days; (4) roentgenograms of the infant's long bones, most satisfactory at about the second week of life, and (5) pediatric follow up by clinical and serologic methods necessitating several months of study.

Dark-Field Examination of the Umbilical Cord.—This method has not been utilized in our series. It is highly lauded in Germany, especially by Philipp,[2] whose publications should be consulted for details. If spirochetes are found, the infant is definitely infected. Their absence does not, however, indicate freedom from infection but merely the necessity for further study by other means. The method has been used by one of us but in our opinion is too cumbersome for routine application.

The Cord Wassermann Test.—The reliability of the cord Wassermann test has long been a controversial subject. Some observers feel that a positive test is a definite indication of infection of the fetus; others believe that the passive transfer of reagin from maternal to fetal circulation is common and that the results of this test are without significance. Two methods of approach are available for a solution of this problem: (1) a comparison of the cord with the maternal blood Wassermann reaction at the time of delivery, to determine the relationships of positive or negative cord tests with the reagin titer of the mother's blood; (2) the correlation of cord Wassermann results with the ultimate status of the child, as determined by necropsy, roentgen and pediatric follow up. Unfortunately, we have no data as to comparative results of maternal and cord Wassermann tests at the moment of delivery, but we are able to offer an opinion as to the reliability of cord Wassermann tests by the second method of study. This information is provided in table 1.

TABLE 1.—*Cord Wassermann Reaction as Compared with Ultimate Status of Infant*

Cord Wassermann Reaction	Number of Pregnancies	Ultimate Status of Infant, per Cent	
		Normal	Syphilitic
Negative	283	86.2	13.7
Positive	54	18.6	81.4

Among infants in whom the Wassermann test on the cord blood was positive, 81.4 per cent were ultimately shown to be syphilitic, while among infants with a negative cord Wassermann reaction, born of a syphilitic mother, only 13.7 per cent proved to have congenital syphilis. It is evident that this test is not an infallible guide to the presence or absence of syphilis in the offspring, but it does provide important information regarding the ultimate diagnosis. A positive test alone is not an indication for immediate treatment but it points strongly to the necessity for further intensive study of the infant.

TABLE 2.—*Condition of Placenta as Compared with Ultimate Status of Infant*

Placenta	Number of Pregnancies	Ultimate Status of Infant, per Cent	
		Normal	Syphilitic
Normal	518	79.9	20.0
Syphilitic	41	12.1	87.8
Questionable	19	....	100.0

Placental Histology.—Macroscopic and microscopic examination of the placenta was a routine procedure in this series of cases, the diagnosis having been made or confirmed in almost all instances by the late Dr. J. W. Williams. In table 2 are shown statistics indicating the ultimate status of the child when the placenta was regarded as normal, syphilitic or questionably syphilitic.

Among cases in which the placenta was considered to be normal, 20 per cent of the offspring subsequently showed evidences of syphilis while 80 per cent remained free from infection. On the other hand, among cases exhibiting a syphilitic or questionably syphilitic placenta, the baby proved to be syphilitic in all save 8.3 per cent. Microscopic study of the placenta, therefore, affords exceedingly important information regarding infection in the child. If the placenta shows changes due to syphilis, the presence of infection in the infant cannot be ruled out without the most careful study over a period of months, although treatment should not be instituted until a definite diagnosis of syphilis has been made. Among cases in which the placenta was normal, however, the child was syphilitic in 20 per cent; thus the occurrence of a normal placenta in no way eliminates the possibility that the child is infected. In actual practice, the value of information obtained by placental examination is somewhat impaired by the fact that among cases showing a syphilitic placenta the child was born alive in only 19 per cent, and even a smaller percentage survived the first few weeks of life. Of eight surviving infants, three were shown to be normal after observation periods of twelve years, eight years and one and one-half years, respectively. The presence of syphilitic changes in the placenta and the apparent absence of syphilis in the fetus raises some interesting questions regarding the mode of infection of the fetus; unfortunately, it is not possible to review in detail the basis for the diagnosis in these three cases. Examination of the placenta is one of the important

2. Philipp, E.: Die frühzeitige Erkennung und Behandlung der Lues bei Mutter und Kind als sozialhygienes Problem, Ztschr. f. Geburtsh. u. Gynäk. **93**: 443, 1928.

aids, not only in arriving at a correct diagnosis of congenital infection in the child, but also at times in making a correct diagnosis of syphilis in the mother. Cases are still encountered in which the changes in the placenta are the only clue to the presence of syphilis in the mother.

The result of the Wassermann test on the umbilical cord blood and the result of placental examination considered together afford information that is of more value in determining the presence or absence of syphilis in the offspring than when either is used alone (table 3). Thus, among cases in which the cord Wassermann test and the placenta were both positive, the infant proved to be syphilitic in all, while among cases in which both of these were negative the child was syphilitic in only 12.2 per cent.

Moreover, when either of these diagnostic procedures gave positive results the percentage of syphilitic children was considerably higher than when both were normal. The figures in table 3 indicate also that the Wassermann test on the cord blood is a more reliable guide than is the result of placental examination, for the percentage of syphilitic offspring was twice as high among cases in which the cord Wassermann test was positive and the placenta normal than when the results were the reverse.

Roentgenograms of the Infant as a Diagnostic Sign.—This subject, including a review of the literature, is thoroughly covered in a series of articles by McLean.[3] His observations tend to show that syphilitic epiphysitis is almost universal in syphilitic infants born alive at term. In some instances visible roentgen changes are difficult to detect at birth, but they are almost always apparent by the end of the second week. It is possible

TABLE 3.—*Cord Wassermann Reaction and Placenta as Compared with Ultimate Status of Infant*

Cord Wassermann Reaction	Placenta	Number of Pregnancies	Ultimate Status of Infant, per Cent	
			Normal	Syphilitic
Positive	Positive	16	....	100.0
Negative	Negative	270	87.7	12.2
Positive	Negative	21	14.3	85.7
Negative	Positive	7	57.1	42.8

TABLE 4.—*Roentgen Examination as Compared with Ultimate Status of Infant*

Roentgen Diagnosis	Number of Children	Ultimate Status of Infant, per Cent	
		Normal	Syphilitic
Normal	219	79.5	20.5
Syphilis	19	....	100.0

that students of the problem will not all be willing to agree to the finality of the roentgenologic results, as expressed by McLean, in the diagnosis of congenital syphilis, for there are instances in which there is room for legitimate differences of opinion in the interpretation of films, and in our own series there are many cases in which no epiphysitis was demonstrable despite the fact that subsequently the infant was shown to have syphilis. Nevertheless, the presence of characteristic epiphyseal lesions as demonstrated roentgenographically affords one of the most definite, as well as one of the earliest, diagnostic signs of congenital syphilis. Among nineteen cases in our series in which a roentgen diagnosis of syphilis was made, all eventually presented supporting evidence for the diagnosis of syphilis.

From the figures in table 4 it is evident that the absence of demonstrable syphilitic epiphysitis does not rule out the possibility that the child has syphilis, for among sixty-two infected children the roentgen examination was negative in forty-three, or 69.3 per cent.

Pediatric Follow Up.—It is certainly true that the blood Wassermann test on the infant at birth is no more reliable than the cord Wassermann test. Many infants who ultimately develop congenital syphilis have negative blood Wassermann reactions during the first few weeks of life. In our clinic, it is routine practice to test the child's blood at the age of 6 weeks. If the test is positive, the diagnosis of syphilis is made even in the absence of clinical or roentgen evidence; if negative, it is repeated at 3 months and 6 months and, when the children can be followed, at even longer intervals.

TABLE 5.—*Pediatric Follow Up*

	Total Number of Children	Duration of Follow Up						
		Less Than 1 Mo.	1-3 Mos.	3-6 Mos.	6-12 Mos.	1-2 Yrs.	2-5 Yrs.	More Than 5 Yrs.
Normal	450	100	45	48	69	62	78	47
Syphilitic	86	2	12	8	20	13	19	12
Questionable	15	2	2	6	2	3	..	..

Unfortunately, our material does not provide an answer to the important practical question of how long a presumably normal infant born of a syphilitic mother should be followed before being discharged as normal. Roberts,[4] from a study of 903 children born of syphilitic mothers, concluded that, should the infant show no clinical or serologic evidence of the disease by the fourth month of life, infection has probably not taken place. There were occasional exceptions to this rule, however, and it is our opinion that it is safest to follow the child with repeated clinical and serologic examinations for a minimum of six months and, if possible, for two years.

In table 5 we present figures that indicate the actual duration of follow up among the children in this series; these are of value chiefly from the standpoint of the normal group, two thirds of whom have been followed for more than three months after birth.

METHOD OF TREATMENT OF SYPHILITIC MOTHERS

Since its inception, the syphilis clinic of the Johns Hopkins Hospital has employed a treatment scheme consisting essentially of alternating courses of an arsphenamine product and a heavy metal, either mercury or bismuth. The former group of drugs is the more potent form of treatment and it has been customary to use the heavy metal only as interim treatment between courses of an arsphenamine. For the purposes of this paper the amount of arsenical drug received by any patient is expressed in terms of grams of arsphenamine. On the basis of the probable therapeutic index (Schamberg and Kolmer) a given amount of neoarsphenamine is recorded as one-half that amount of arsphenamine. However, since all save a relatively few of our patients received arsphenamine, the results

3. McLean, Stafford: The Osseous Lesions of Congenital Syphilis, Am. J. Dis. Child. **41**: 130 (Jan.), 363 (Feb.), 607 (March), 887 (April) 1128 (May), 1411 (June) 1931.

4. Roberts, M. H.: Congenital Syphilis, Am. J. Dis. Child. **45**: 461 (March) 1933.

published here afford essentially an indication of the effectiveness of this preparation. The individual dose of the drug was found to have been remarkably constant, 0.3 Gm. constituting the usual dose for an adult female. A course of six treatments, therefore, would imply an amount of arsphenamine just under 2 Gm., two courses just under 4 Gm., and so on. Arsphenamine in this dosage is well tolerated by the pregnant woman. The pregnant state provides an increased liability for the supposed arsphenamine accident of acute yellow atrophy of the liver, of which we have seen four examples in pregnant women. Arsphenamine therapy does not, however, increase the incidence of other toxemias of pregnancy; it does not cause abortion or miscarriage, though its use in the last week or two of pregnancy may precipitate labor; and it is without deleterious effects on the fetus.

As the heavy metals occupied a position of secondary importance in our treatment scheme, no opinion can be expressed as to their isolated effect. Rarely were these drugs given alone or in quantities out of proportion to the arsphenamines. It is possible, however, to formulate an opinion as to their value when used in conjunction with arsphenamine as compared with arsenical treatment alone.

With these limitations in mind we may analyze the results of antisyphilitic treatment administered at various times in relation to the pregnancy. To 268 patients, no treatment was given either before or during pregnancy; to 82, treatment was given before pregnancy but none during pregnancy; to 391 during pregnancy only; to 202, both before and during pregnancy.

THE OUTCOME OF PREGNANCY IN UNTREATED SYPHILITIC MOTHERS

Control Group.—The chances that an untreated syphilitic woman may bear a normal child have been variously estimated at from one in four to one in twenty-five. In McCord's [5] series of untreated syphilitic colored women the percentage giving birth to stillborn infants was 66.3 in one series of 116, and 80.0 in another series of 137; undoubtedly a large number of the children born alive had syphilis. Gammeltoft,[6] dealing almost entirely with white women, found 96.5 per cent syphilitic infants among a total of 201 born of untreated syphilitic mothers.

TABLE 6.—*Outcome of Pregnancy with Varying Amounts of Antisyphilitic Treatment: No Treatment Prior to Pregnancy*

Treatment During Pregnancy	Number of Pregnancies	Condition of Child at Birth, per Cent		Ultimate Status of Child Known,	Of These, per Cent	
		Living	Dead	No. of Children	Normal	Syphilitic
None, total	268	54.1	45.9	155	35.4	64.5
None, infants measuring 45 cm. or more	265*	77.4	22.6	139	48.2	51.8
Arsphenamine						
Less than 1 Gm.	118	89.0	11.0	78	73.0	27.0
1-2 Gm.	127	90.6	9.4	94	79.7	20.2
2-3 Gm.	85	91.8	8.2	62	83.8	16.1
3-4 Gm.	33	100.0	...	24	87.5	12.5
4-6 Gm.	19	94.7	5.3	13	100.0	....

* These 265 pregnancies are part of a larger total of 400 or more, some of which are not included in the first lateral column of 268 pregnancies because of the fact that data as to syphilologic examination of the mother were lacking.

In our series of 268 pregnancies in which the mother had received no treatment either before or during pregnancy, 45.9 per cent resulted in a still-born infant, and 54.1 per cent were born alive. Among infants in whom the ultimate status is known, as determined by the various methods of study outlined above, 35.4 per cent were normal and 64.5 per cent were demonstrated clinically or at autopsy to have syphilis. It is difficult to appraise the factors accounting for a higher percentage of normal children in our series than in similar groups from some other clinics. It is possible that the routine use of the Wassermann test over a period of many years has succeeded in adding to the group of syphilitic mothers many who would otherwise pass unrecognized. It is conceivable, also, that by the use of a sensitive test patients with long standing infections are included who would be more likely than not to give birth to normal children (Kassowitz's law), for it is probable that the Wassermann titer decreases in many patients with increasing lapse of time after infection.

TABLE 7.—*Effect of the Addition of Heavy Metal to Arsphenamine Therapy During Pregnancy on the Ultimate Outcome in the Child*

Treatment of the Mother During Pregnancy	Number of Pregnancies	Condition of Child at Birth, per Cent		Ultimate Status of Child Known,	Of These, per Cent	
		Living	Dead	No. of Children	Normal	Syphilitic
Arsphenamine alone, 2 Gm. or more	60	90.0	10.0	41	78.0	22.0
Arsphenamine, 2 Gm. or more, plus mercury or bismuth compounds	78	96.1	3.9	61	93.4	6.5

RESULTS OF ANTISYPHILITIC TREATMENT OF THE MOTHER IN THE OUTCOME OF PREGNANCY

Treatment During Pregnancy, None Previously.—The Optimal Amount of Arsphenamine: The data of table 6, showing the immediate and ultimate outcome as to the child in 650 deliveries occurring in women who had never received any treatment prior to the pregnancy under consideration, are confirmatory of the excellent results presented by many other investigators the world over. In addition, however, these data offer evidence as to the optimal amount of arsphenamine for the child. The 268 pregnancies in untreated women are included as a control. The ultimate status of the child is classified on the basis just described. Even a very small amount of treatment (1 Gm. or less of arsphenamine) given in the last month of pregnancy alters the prognosis for the infant in startling fashion in the direction of his chance for ultimate normality. We realize, however, that these data do not present an absolutely accurate picture of the efficacy of treatment, since women who have gone through to the tenth month of pregnancy represent a selected group. We find, however, that, of these women who were untreated and who were delivered of a child of 45 cm. or more in length, 51.8 per cent of the offspring were syphilitic and 48.2 per cent nonsyphilitic. Of the treated patients, delivered at term and receiving less than 1 Gm. of arsphenamine, only 27 per cent were syphilitic and 73 per cent normal. When it was possible to give as much as 4 Gm. (an approximate average of from twelve to fourteen injections) congenital syphilis in the offspring was not observed.

5. McCord, J. R.: Prenatal Treatment of Syphilis: Some Results of Antisyphilitic Treatment in a Series of 519 Pregnant Syphilitic Colored Women, Am. J. Syph. **16**: 78 (Jan.) 1932.

6. Gammeltoft, S. A.: Syphilis and Pregnancy, Am. J. Obst. & Gynec. **15**: 747 (June) 1928.

THE USE OF HEAVY METALS IN ADDITION TO ARSPHENAMINE THERAPY

A point of great practical importance is whether treatment during pregnancy should be limited to the arsphenamines alone, or whether a heavy metal should be added. Our material furnishes an answer (table 7) that can be regarded only as suggestive in view of the fact that the time element of duration of treatment is a factor of considerable importance (table 8).

Comparing only those patients who received 2 or more grams of arsphenamine with and without the addition of bismuth or mercury compounds, the advantage to the child, in terms both of immediate and of ultimate outcome, is significantly in favor of those in whom heavy metals were used. This is particularly striking in the ultimate status of the child. When the mother received some heavy metal during pregnancy the child was normal in 93.4 per cent and syphilitic in 6.5 per cent, as compared with 78.0 and 22.0 per cent, respectively, in infants born of mothers who received arsphenamine alone.

In this particular series of patients the two drugs (arsenical and heavy metal) were used in alternating courses when time permitted; and the mothers who received arsphenamine alone were usually so treated because they first came under observation so late in pregnancy that there was no available time in which to follow a course of arsphenamine with a course of heavy metal. The superior results when this was done, however, may indicate either the desirability of combined treatment or the commencement of treatment early in pregnancy. If treatment can be started early enough (before the fifth month) to permit alternating courses, this should be done.

RELATIONSHIP OF OUTCOME TO THE TIME OF STARTING TREATMENT

The dosage of antisyphilitic drugs is not the only factor involved in the child's fate. The duration of pregnancy at the start of treatment is equally important. This is analyzed in table 8. The chances of obtaining a living infant are about equal, whether the mother's treatment is started in the first or second half of pregnancy (and in either case, this approximates the incidence of living children in normal women). But if it is started within the first five months of pregnancy, the probability of the birth of a syphilitic child is less than half as great (8.7 per cent) as when it is delayed until the sixth month or later (22.2 per cent). It is of great importance to note, however, that both the immediate status and the ultimate status of the child are vastly better even if treatment is delayed until the final month of pregnancy than if no treatment at all is given (percentage of living children 89.0, as compared with 77.4; of normal children, 73.0 as compared with 48.2 (table 4). Though prevention of infection of the fetus by means of treatment begun before the fifth month is easier than its "cure" with treatment given later, nevertheless something of value may be accomplished no matter how late in pregnancy the existence of syphilis is recognized in the mother. Even if she is almost at term, an injection or two of arsphenamine may materially improve the infant's chance of life (table 9).

TABLE 8.—*Outcome as to Child as Influenced by Time of Starting Treatment in the Mother*

Treatment of the Mother Started During	Total Pregnancies	Condition of Child at Birth, per Cent		Ultimate Status of Child Known, No. of Children	Of These, per Cent	
		Living	Dead		Normal	Syphilitic
1st to 5th month, inclusive	74	90.5	9.5	57	91.2	8.7
6th to 10th month, inclusive	312	89.5	10.6	220	77.7	22.2

TABLE 9.—*Effect of Treatment Late in Pregnancy as Compared with No Treatment in the Outcome or to the Child*

Treatment of the Mother During Pregnancy	Total Pregnancies	Condition of Child at Birth, per Cent		Ultimate Status of Child Known, No. of Children	Of These, per Cent	
		Living	Dead		Normal	Syphilitic
None	268	54.1	45.9	155	35.4	64.5
During 9th and 10th months only	168	87.5	12.5	117	75.4	24.5

IMPORTANCE OF CONTINUOUS TREATMENT, AND OF TREATMENT IN THE LAST TRIMESTER OF PREGNANCY

An analysis of the failures of antisyphilitic treatment provides information on two additional points of importance. In fourteen instances, syphilitic babies were born to mothers who received treatment before the beginning of the eighth month. These are listed in detail.

Treatment Started in Seventh Month: Outcome, Syphilis in Five.—1. Treatment, arsphenamine 2.0 Gm. in seven doses over a period of fourteen weeks. Child living at term. Clinical syphilis.

2. Treatment, arsphenamine 1.5 Gm. in five doses. No treatment during last fifty days of pregnancy. Child still-born at term. Autopsy, syphilis.

3. Treatment, arsphenamine 2.3 Gm. in six doses, but only mercury inunctions in last sixty days of pregnancy. Child living at term. Clinical syphilis.

4. Treatment, arsphenamine 1.5 Gm. in five doses plus an indefinite amount of mercury by inunction. No arsphenamine during last sixty days of pregnancy. Child living at term. Clinical syphilis.

5. Treatment, arsphenamine 0.4 Gm. in one dose, neoarsphenamine 2.7 Gm. in six doses, and bismuth salicylate 1.0 Gm. in five doses, but only bismuth in last six weeks of pregnancy. Child living at term. Clinical syphilis.

Treatment Started in Sixth Month: Outcome, Syphilis in Three.—6. Treatment, arsphenamine 1.2 Gm. in three doses and silver arsphenamine 0.8 Gm. in four doses over a period of eighteen weeks. Child living at term. Clinical syphilis.

7. Treatment, arsphenamine 2.1 Gm. in six doses and an undetermined amount of mercury by inunction. No arsphenamine during the last twelve weeks of pregnancy. Child living at term. Clinical syphilis.

8. Treatment, only mercury by inunction at any time. Child living at term. Clinical syphilis.

Treatment Started in Fifth Month: Outcome, Syphilis in Two.—9. Treatment, arsphenamine 2.2 Gm. in seven doses plus an undetermined amount of mercury by inunction, but only one treatment of arsphenamine during the last nine weeks of pregnancy. Child living at term. Clinical syphilis.

10. Pregnancy resulted in six months abortion after two doses of arsphenamine. Roentgen examination showed syphilitic epiphysitis.

Treatment Started from First to Fourth Month: Outcome, Syphilis in Four.—11. Treatment, arsphenamine 1.8 Gm. in six doses plus mercury by inunction for four months. No arsphenamine during the last nineteen weeks of pregnancy. Child living at term. Clinical syphilis.

12. Treatment, arsphenamine 0.8 Gm. in three doses. No treatment during last twenty-two weeks of pregnancy. Child living at term. Clinical syphilis.

13. Treatment, arsphenamine 2.3 Gm. in six doses. No treatment in last twenty-seven weeks of pregnancy. Child living at term. Clinical syphilis.

14. Treatment, arsphenamine 3.9 Gm. in eleven doses plus an undetermined amount of mercury by inunction over a period of twenty-six weeks. Child still-born. Autopsy, syphilis.

One of two factors is common to all these cases: Either treatment was administered at irregular intervals or no arsphenamine at all was given during the last trimester of pregnancy. It seems clear from these unfortunate instances that it does not suffice to give treatment irregularly or only during the early months of pregnancy; it must be continued regularly and especially throughout the last trimester. The administration of several doses of an arsphenamine just before delivery seems particularly important.

In table 10 this problem is presented in slightly different form.

Pregnancies resulting in a known syphilitic infant after the mother received 2 Gm. or more of arsphenamine are tabulated; included are three patients who received some treatment before pregnancy. Here again it is noted that in many of the cases treatment was irregular, and frequently no arsphenamine was received in the last weeks of pregnancy. This, however, is not true with regard to cases 1, 7, 11, 12, 13 and 15, in which treatment was regular and the amount of each dose not unusually low. The only possible conclusion to be drawn is that treatment up to 4 Gm. of arsphenamine or its equivalent, or less than twelve treatments of an arsenical, is simply inadequate, in certain cases, to protect the child from syphilis regardless of the regularity of treatment. A point to be noted in passing is that in seven of the sixteen cases presented in table 10 the mother had secondary syphilis during pregnancy. As the percentage of early syphilis in this special group is much higher than in the whole series, it would indicate that from 2 to 4 Gm. of arsphenamine is less efficient in preventing syphilitic offspring in mothers with early syphilis than in mothers with late syphilis.

TREATMENT BEFORE PREGNANCY, NONE DURING PREGNANCY

Among the women included in this study were eighty-two who received antisyphilitic treatment at varying times before conception but who, either purposely or inadvertently, were not treated during pregnancy. The outcome of pregnancy among this group is shown in table 11.

In 81.7 per cent of cases the child was born alive; the offspring proved ultimately to be normal in 91.3 per cent and syphilitic in only 8.7 per cent of cases in which the ultimate status of the child is known. Viewed as a group, therefore, the results of treatment before pregnancy in these patients were even better than when treatment was given only during pregnancy. Moreover, the results vary, in general, with the amount of treatment given before pregnancy, for the outcome was much more favorable in patients receiving more than 2 Gm. of arsphenamine than in those receiving less than this amount. It would appear from table 11 that 2 Gm. or more of arsphenamine before pregnancy is sufficient to protect the child in every instance. However, we have recorded one case, included in table 12, in which the mother received not only 4 Gm. of arsphenamine before pregnancy but some treatment dur-

TABLE 10.—*Women Bearing Syphilitic Child After Receiving Equivalent of Arsphenamine 2 Gm. or More During Pregnancy*

Serial Number	Race, White or Negro	Age	Parity	Mother's Diagnosis	Condition of Child at Birth*	Basis of Diagnosis of Syphilis in Child	Treatment Prior to This Pregnancy	Treatment This Pregnancy: Drug	Amount, Gm.	Number of Doses	No. of Days Before Delivery Treatment Instituted	Comment
1	W.	..	3	Secondary	L.P.	Clinical	0	Arsphenamine, neoarsphenamine	0.3 4.8	1 8	58	
2	W.	..	3	Secondary	L.T.	Clinical	0	Arsphenamine, mercury	2.1 †	6	... 119	Last treatment with arsphenamine 81 days before delivery
3	N.	..	1	Latent	L.T.	Clinical	0	Arsphenamine, silver arsphenamine	1.2 0.8	3 4	136	Treatment irregular
4	N.	..	1	Latent	S.B.T.	Autopsy	0	Arsphenamine	2.0	7	85	Treatment irregular
5	N.	..	1	Secondary	L.T.	Clinical	0	Arsphenamine	2.3	6	249	Last treatment 175 days before delivery
6	W.	20	1	Latent	L.T.	Clinical	Indefinite amount	Arsphenamine, mercury	2.1 6 wks.	6	... 84	Last treatment 45 days before delivery
7	N.	25	2	Secondary	L.T.	Clinical	0	Arsphenamine	2.8	7	43	
8	N.	32	7	Latent	L.T.	Clinical	0	Arsphenamine, mercury	2.3 4 wks.	6	... 105	Last arsphenamine 56 days before delivery; 3 syphilitic children prior to this one; duration of infection 5 years, probably longer
9	N.	22	1	Latent	L.P.	Clinical	8 treatments previous year	Arsphenamine	2.4	6	97	Treatment irregular
10	N.	24	6	Secondary	L.T.	Clinical	0	Arsphenamine	2.2	7	147	Only one treatment during last 66 days of pregnancy
11	W.	19	1	Secondary	S.B.T.	Autopsy	0	Arsphenamine	2.1	7	53	
12	N.	22	1	Latent	L.T.	Clinical	0	Arsphenamine, neoarsphenamine	2.1 1.2	7 2	61	
13	W.	20	3	Latent	L.T.	Clinical	15 treatments 3 yrs. previous	Arsphenamine	2.7	9	72	
14	N.	23	1	Latent	L.T.	Clinical	0	Arsphenamine	3.0	7	97	Treatment irregular
15	N.	17	1	Secondary	L.T.	Clinical	0	Arsphenamine	3.2	8	64	
16	N.	25	5	Late syphilis	S.B.T.	Autopsy	0	Arsphenamine, mercury	3.9 ...	11	... 179	Treatment irregular

* L.T., living at term; L.P., living premature; S.B.T., still-born at term.

ing pregnancy as well and yet gave birth to a syphilitic baby. In this instance the mother exhibited lesions of tertiary syphilis during pregnancy in spite of previous treatment. Thus, despite the relatively large amount of previous antisyphilitic treatment, the infection was still active and consequently a menace to the child.

Among the group of eighty-two women who were treated prior to but not during pregnancy, twenty had positive Wassermann reactions and fifty-one had negative reactions during pregnancy, while in the remainder no reaction was recorded. Among the twenty patients with a positive Wassermann reaction the ultimate status of the child was normal in five, syphilitic in four, "no data" in eleven. Among the mothers exhibiting a negative Wassermann reaction the outcome as regards the child was normal in thirty-three, syphilitic in none, "no data" in eighteen. In other words, the four known syphilitic infants in this group belonged to mothers with positive Wassermann reactions.

It appears, therefore, that if, in spite of previous treatment, the blood Wassermann reaction remains positive, or if the patient has developed active lesions of syphilis, the amount of previous treatment should be disregarded and the patient treated as would be any other with active syphilis. On the other hand, if the mother has been thoroughly treated before pregnancy and has remained clinically and serologically negative for at least a year after the end of treatment, it is probably permissible to withhold treatment during pregnancy.

TREATMENT BOTH BEFORE AND DURING PREGNANCY

As might be expected, the outcome of pregnancy in women treated both before and during pregnancy is even more favorable than when treatment is given either before or during pregnancy alone. The outcome

TABLE 11.—*Effect of Treatment of the Mother Before Pregnancy, None During Pregnancy, on Outcome of Child*

Treatment of the Mother	Number of Pregnancies	Condition of Child at Birth, per Cent		Ultimate Status of Child Known, No. of Children	Of These, per Cent	
		Living	Dead		Normal	Syphilitic
Mercury only	3	66.6	33.3	1	....	100.0
Arsphenamine, less than 1 Gm. with or without mercury or bismuth compounds	13	92.3	7.7	7	71.4	28.5
Arsphenamine 1-2 Gm., with or without mercury or bismuth compounds	11	72.7	27.2	7	100.0	....
Arsphenamine 2-4 Gm. plus mercury or bismuth compounds	19	89.4	10.5	12	100.0	....
Arsphenamine more than 4 Gm. plus mercury or bismuth compounds	29	82.7	17.2	18	100.0	....
Exact amount not known	7	57.1	42.8	1	....	100.0
Total	82	81.7	18.3	46	91.3	8.6

of pregnancy in 202 cases is shown in table 12. Among this group the percentage of living children is quite as high as that which might be encountered among a similar group of nonsyphilitic mothers. Moreover, of 135 children whose ultimate status is known, 129, or 95.5 per cent, were normal. Three syphilitic children were born to mothers who received a known amount of treatment; in two cases less than 4 Gm. of arsphenamine had been given either before or during pregnancy. In the third case, referred to in a preceding paragraph, the mother exhibited signs of active syphilis during pregnancy despite large amounts of treatment prior to conception.

SUMMARY

Nine hundred and forty-three pregnancies occurring in syphilitic women were analyzed with regard to the presence or absence of congenital syphilis in the offspring, particular attention being paid to the effect of maternal antisyphilitic treatment on the outcome of

TABLE 12.—*Treatment both Before and During Pregnancy*

Treatment with Arsphenamine		Number of Pregnancies	Condition of Child at Birth, per Cent		Ultimate Status of Child Known, No. of Children	Of These, per Cent	
Before Pregnancy	During Pregnancy		Living	Dead		Normal	Syphilitic
< 2 Gm.	< 2 Gm.	35	88.5	11.4	24	95.8	4.2
2-4 Gm.	< 2 Gm.	26	96.1	3.8	14	100.0	....
4 Gm. or more	< 2 Gm.	33	100.0	....	22	100.0	....
< 2 Gm.	2-4 Gm.	20	95.0	5.0	17	94.1	5.9
2-4 Gm.	2-4 Gm.	22	86.3	13.7	14	100.0	....
4 Gm. or more	2-4 Gm.	25	92.0	8.0	15	93.3	6.7
Any amount	4 Gm. or more	20	100.0	....	16	100.0	....
Exact amount not known	Exact amount not known	21	85.7	14.2	13	77.0	23.0
Total		202	93.0	6.9	135	95.5	4.5

pregnancy. In addition, the relative value in the diagnosis of congenital syphilis of such signs as the cord Wassermann test, placental histology, and roentgen examination of the infant's bones for syphilitic epiphysitis were considered. Among cases showing a negative cord Wassermann reaction the infant was nonsyphilitic in 86.2 per cent, and among those giving a positive reaction the infant was normal in only 18.6 per cent.

Among cases in which the placenta was normal on macroscopic and microscopic examination the infant proved to be nonsyphilitic in 79.9 per cent, while among cases showing syphilitic changes in the placenta the offspring was syphilitic in all but 12.1 per cent. When these two diagnostic aids were considered together, the information was of more value than when each was considered alone. Infants presenting evidences of syphilitic epiphysitis invariably exhibited other evidences of congenital syphilis. However, among children showing no abnormalities on roentgen examination, 20.5 per cent were subsequently shown to have congenital syphilis.

The striking beneficial effect of antenatal arsphenamine therapy is shown by the fact that among pregnancies occurring in untreated syphilitic mothers the infant was born alive in only 54.1 per cent and 64.5 per cent of living offspring were syphilitic, while the administration of as little as 1 Gm. or less of arsphenamine changed these figures to 89 and 27 per cent, respectively. Administration of larger amounts of arsphenamine or related products brought about a further reduction in fetal mortality and in the percentage of syphilitic offspring, until when as much as 4 Gm. (from twelve to fourteen injections) was given no syphilitic offspring was observed. The administration of heavy metals, mercury or bismuth compounds, in addition to arsphenamine, enhanced the good results achieved with the latter alone. Better results were obtained when maternal treatment was started in the first half of pregnancy than when begun in the latter half. It was found particularly important, however,

that the arsenicals be given in the two months immediately preceding delivery.

The results in cases treated before pregnancy and not during pregnancy were, in general, quite as good as when the mother was treated during pregnancy only. Here, however, the status of the syphilitic infection in the mother is probably the important factor.

Antisyphilitic treatment both before and during pregnancy yielded results superior to treatment during either period alone.

CONCLUSIONS

1. The Wassermann test on the blood of the umbilical cord and study of the placental histology are important aids in the diagnosis of congenital syphilis and should be carried out on all patients not proved during pregnancy to be free from syphilis. Of the two, the former is the more reliable.

2. The presence of characteristic changes in the epiphyses of the long bones during the first two weeks of life is diagnostic of congenital syphilis, but the absence of epiphyseal abnormalities does not rule out congenital infection.

3. Antenatal treatment of pregnant syphilitic patients with arsphenamine reduces the percentage of fetal deaths and the percentage of syphilitic infants in a striking manner. The good results are roughly proportional to the amount of treatment given and the time at which it is started; even a few treatments in the last weeks of pregnancy, however, will materially alter the outcome.

THE POSTTRAUMATIC NEUROSES

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One of the oldest questions which trouble the mind of the physician is that pertaining to those frequent and baffling nervous states following trauma. The number and importance of these conditions seem to be increasing with the widespread use of machinery in modern industry and transportation. No physician can escape these cases, and all are daily impressed with the great loss of time and money, both to the employer and to the patient, which they bring about. An age-old conflict is being waged today, as in years gone by, between the exponents of the so-called organic and functional interpretations of these conditions. Before the day of Charcot, the explanation was usually sought in organic disturbances of the nervous system, but this great French neurologist early recognized the potent rôle played by emotional factors. The earliest work of Sigmund Freud, while a student of Charcot's, was in connection with patients exhibiting neurotic states following injury, and since those days it has been generally recognized that the conception of the posttraumatic neurosis was a valuable and valid one. In the past few years, however, an attempt has been made to explain the nervous states consequent to injury—and particularly injury to the head—on organic lesions of the nervous system. This renewed emphasis on the organic factor is largely attributable to the relatively new methods of encephalography and ventriculography and the recent studies of the mechanics of the cerebrospinal fluid. The introduction of the method of encephalography has especially given rise to a great deal of enthusiasm and a great wealth of observations in patients who have suffered head trauma. The whole theory of the mechanical etiology of epilepsy has arisen from this movement, and the attempt is being made to explain great numbers of other symptoms on the basis of a disturbance in the hydrodynamics of the cerebrospinal fluid. Many other, so-called finer, methods of study have been utilized in the attempt to find an organic cause for the posttraumatic syndromes.

We do not wish to minimize the importance or value of this attempt. Unquestionably, profit will eventually accrue from these new observations in a broader understanding of the pathologic physiology of head injury. There is, however, a grave danger of being swept off one's feet by overconfidence in a mechanical method. For instance, Strauss and Savitsky[1] state that the term "posttraumatic neurosis" should be abandoned and all the sequelae of head injury explained on the basis of cerebral pathologic changes. While recognizing the great value of these workers' contributions, we feel the need of a new exposition of the psychologic factors underlying the neuroses occurring after head trauma. The neuroses following injury to the head do not differ materially from those after injury to other parts of the body, where no injury to the central nervous system can be in question. Consequently, it seems unwarranted to abandon the concept of neurosis following head trauma, and there appears to be greater need than ever of a proper understanding of these emotional shipwrecks.

It should be made clear at the outset that the diagnosis of a neurosis is not a diagnosis of exclusion. The day is long since past when the term "neurosis," posttraumatic or other, was a waste-basket into which was thrown diagnostic failures. These "functional" disturbances are, on the other hand, recognizable by their own symptomatology, a symptomatology of which an unfortunately large part of the medical profession is quite ignorant.

CLINICAL FEATURES

What are the diagnostic criteria by which the posttraumatic, as well as the nontraumatic, neuroses may be recognized? A study of great numbers of these patients reveals at once that the posttraumatic neuroses do not differ in any essential way from most other, nontraumatic, neuroses. They can all be divided into groups of considerable clinical value, according to their outstanding symptomatology. The following classification includes the majority of cases:

Posttraumatic Neurasthenia.—Cases falling into this group exhibit abnormal fatigue and irritability as their outstanding clinical characteristics. This fatigue and irritability are different from those seen in cases of debility from organic disease, in that they are associated with extreme emotionalism and a disproportion between the actual strength of the patient and his supposed weakness. This syndrome is thus rather well described as posttraumatic irritable weakness with emotionalism.

Posttraumatic Anxiety Neurosis.—With these patients there is a vast anxiety, which manifests itself with regard to insignificant or imaginary dangers. There is nearly always a marked hypochondria, which is expressed in the patient's concern over one special

Read before the Congress of Railway Surgeons at Chicago, Aug. 11, 1933.

1. Strauss, Israel, and Savitsky, Nathan: Head Injury: Its Neurologic and Psychiatric Aspect, read before the American Neurological Association, Washington, D. C., in May, 1933.

or many detailed somatic complaints. These complaints are related most often to the part of the body that was injured, but they are frequently so numerous and bizarre as to render their explanation on an organic basis impossible.

Headache is the most common symptom encountered after head injury. That this headache may be related to "organic" changes is well known, and Foster Kennedy [2] has recently pointed out the criteria by which it may be recognized. The anxiety headache, on the one hand, is recognizable in that it is usually not a true pain but rather a sense of weight or pressure, is often occipital or vertical in distribution, and is very often constantly present without intermission for days and weeks, being increased only by emotional excitement. Practically all headaches of "organic" origin are, on the other hand, intermittent. The hypochondria in these patients may concern itself chiefly with one organ or symptom until it becomes almost an obsession. In addition, the patient with an anxiety neurosis usually exhibits excessive sweating, cold, clammy hands, tremulousness and dilated pupils—all symptoms of sympathetic overstimulation. The posttraumatic anxiety neurosis can thus be briefly described as exhibiting anxious hypochondria with excessive sympathetic stimulation.

Posttraumatic Hysteria.—This is perhaps the most common of the "functional" nervous conditions seen after trauma, although perhaps rare in its pure state. Patients with this type of neurosis exhibit pseudo-organic—usually neurologic—signs and symptoms, such as blindness, deafness, paralysis, anesthesias, and disturbances of motion or gait. These signs can almost invariably be demonstrated to be nonanatomic; i. e., the paralyses, anesthesias and so on do not correspond to the actual anatomic relationships but rather to the patient's idea of the anatomic relationships. Examples of such signs are "stocking and glove" anesthesias, complete paraplegia without sphincter disturbances, and the like. In addition, these patients manifest an abnormal degree of suggestibility. For example, the nonanatomic anesthesias can be altered at the suggestion of the physician. Such a finding, of course, quite excludes an "organic" origin for the sign.

This description would be inadequate if it did not point out that these forms of the posttraumatic neuroses are most often combined rather than pure. One sees regularly anxiety neurasthenia and anxiety hysteria in which the signs and symptoms are mixed.

In addition to these more or less standardized clinical manifestations there are other features in connection with these posttraumatic neuroses which make their recognition more certain. The peculiar emotional state of the patient is almost always diagnostic, being a combination of fear of disability (anxiety), resentment toward the agent responsible for the injury and toward any one, such as the doctor, suggesting that the injury is physically negligible, and a determination to prove beyond a doubt that the injury is "real"; i. e., "organic." Also, the disability following the injury is always used to explain the inability of the patient to meet his problems. He can't work, earn money or satisfy his domestic demands because of this particular injury. Furthermore, the reaction of the patient to therapeutic effort is almost always characteristic; there is a tendency to blame any medicine or other therapeutic measures for the continuation or exacerbation of these symptoms. All methods fail or fall short of their complete purpose, and the doctor begins to feel sure that the patient lacks a real desire to get well. In severe cases these numerous, bizarre and stubborn symptoms, which the physician cannot explain by any known laws of anatomy or physiology, together with the peculiar mental attitude of the patient, constitute a therapeutic problem that is familiar and puzzling to all physicians and that they often eventually are glad to abandon unsolved when the patient, discouraged, seeks aid elsewhere.

PSYCHOLOGY OF THE POSTTRAUMATIC NEUROSES

To attempt to explain these syndromes by recourse to encephalographic, serologic, otoneurologic and various other mechanical methods is to show oneself unfamiliar with the complexity and delicacy of the disturbances from which these patients suffer. In particular, the encephalogram is unsuited to the elucidation of the difficulty, however valuable it may be in other conditions. Apart from abnormalities of the ventricles, gross, localized atrophy of the brain, and distortions of the cerebrospinal pathways by cicatricial contractions and so on, it is our opinion that the encephalogram cannot yet be interpreted with assurance. Furthermore, just what constitutes a normal encephalogram has not been finally established. To one having experience with these neurotic patients, it seems obvious that they suffer largely from emotional and psychologic, rather than physical, difficulty. Consequently, without entering into the old and sterile question as to the relationships between the mind and the brain, it is obvious that, at the present stage of knowledge, it is futile to approach the posttraumatic neuroses from the anatomic or pathologic aspect, and that, at least for the present, it must be studied from the psychologic standpoint, for the purpose of both diagnosis and therapy. One cannot pretend to understand the psychology of the posttraumatic neuroses in all cases because of the extraordinary variety of human nature and the multiplicity of the issues involved. However, a summary of present views can be given in the hope that even a partial understanding will lead to more effective diagnosis and treatment of these unfortunate patients.

One of the first facts that impress one when the history of these patients is carefully studied is that there were evidences of marked neurosis or marked ineffectiveness in the personality before the particular injury in question. This has also been pointed out by other observers [3] but is often difficult to demonstrate, since these patients hide evidences of any trouble they may have had previous to the injury. Aside from direct observation, the fact that only certain people develop posttraumatic neuroses, while others with severe injuries do not, suggests that some preexisting factor must have been present to determine the development of the neurosis. It is, indeed, notorious that great numbers of patients who have received the most severe injuries do not develop a neurosis, while in others the slightest injury suffices to precipitate a severe nervous state.[4] These facts suggest very strongly that people who develop posttraumatic neuroses already had the psychologic basis for the breakdown, and that the injury served merely as a precipitant.

2. Kennedy, Foster: Head Injuries—Effects and Their Appraisal: IV. Evaluation of Evidence, Arch. Neurol. & Psychiat. **27**: 811-814 (April) 1932.

3. Gordon, Alfred: Delayed Mental Disorders Following Cranial Traumatism and Their Psychopathological Interpretation, J. Nerv. & Ment. Dis. **77**: 259-273 (March) 1933.

4. Freud, Sigmund: Beyond the Pleasure Principle, London, International Psychoanalytical Press.

That this is true is suggested also by the observations of Schaller and Somers,[5] who found that after recovery from a posttraumatic neurosis had begun a certain point was reached when recovery ceased and the patient remained at a standstill or retrogressed. It thus appeared that, after the immediate illness had been alleviated, the untoward circumstances in connection with the injury adjusted, the fight for compensation ended, the repeated medical examinations stopped, and the patient back at work, there still persisted a personality defect which rendered the patient subnormal. Therefore, the patient who suffers from a posttraumatic neurosis must be considered already abnormal before the injury. The reason for this abnormality, this personality defect, is, therefore, to be traced much further back than the injury, since it existed prior to the injury.

The ultimate understanding and treatment of the posttraumatic neurosis thus involves a fundamental psychologic study of the individual in his relationships to himself, his environment and his associates. Such study leads inevitably to childhood, early home conditions, and the establishment of undesirable behavior tendencies in early life. These behavior tendencies consist largely in an increased self centeredness, a feeling of inferiority, an improper and often unduly antagonistic attitude toward authority, and an inability to face difficulty with courage, rather seeking refuge in excuses and in illness.

It will be profitable at this point to cite briefly a case seen in St. Luke's neurologic outpatient department by Dr. T. L. Fentress and one of us (R. P. M.):

H. V., a carpenter, aged 45, came to the clinic complaining of generalized weakness, painful back, attacks of numbness in his arms and legs, occasional headaches (especially distributed over the occipital region), insomnia, irritability, inability to lie on his left side because of pain in his arms, discomfort during defecation, and anxiety about his cervical spine and occipital region, together with loss of memory, which he attributed to a growth at the base of his brain. These complaints he dated back to an accident that occurred in April, 1932, when he fell a short distance from a ladder and struck the occiput. He was not rendered unconscious and continued to work. However, one month after this accident he lost his job and thereafter began to suffer from pain in the occiput and neck. For this trouble he sought medical aid, and the physician, taking a serious view of the affair, urged that roentgen examinations and other expensive tests be made, for all of which the patient did not have sufficient money. Thereupon the physician urged the patient to sue the company for which he worked when injured, attributing his troubles to the fall from the ladder. He was urged into this suit also by his wife. The suit was unsuccessful, whereupon the other numerous symptoms already mentioned developed. In spite of many examinations and much treatment, his condition had persisted and even grown worse.

The general and neurologic examinations were objectively negative, except that the patient was exceedingly anxious and tremulous, his hands were cold and dripping with perspiration, his axillae were constantly sweating so that the drops ran down his sides during the examination, his pupils were large, and his whole mental state was chaotic. It was impossible to detect objective evidence of any organic disease.

At this point, the detailed past history of the patient will be of interest. He was the youngest child in his family, and his father died when the patient was 3 years of age. Being the youngest, he became his mother's favorite and was sheltered and protected by her from his earliest life. She defended him against his playmates, made all his decisions for him, humored him in his slightest wishes, and when he grew up would never go to bed until he was safely back at home. She sympathized with him in all his difficulties and comforted him by laying the blame always on others when he encountered boyhood troubles.

Eventually his mother became an invalid and he went to live with his older brother and his wife. Here the history was repeated. His brother's wife humored and catered to him, even as his mother had done. At the age of 22 he married, but of this marriage we know little except that two children were born. At the age of 30 he lost his wife and one son in an influenza epidemic and finally he remarried, about the time he received the injury to his head. His second wife accompanied him to the clinic. She was a strong and aggressive type of woman, a former trained nurse, who answered questions for him and obviously did his thinking for him, and humored and dominated him.

This patient illustrates well many of the points which have already been made in this paper. His case is properly diagnosed as one of posttraumatic anxiety neurosis. It is quite clear, even on reciting the list of the patient's complaints, that no conceivable injury that he could have received in his fall could have caused all his trouble; in fact, he suffered but little inconvenience from his fall until a month later, after he had lost his job, i. e., met a difficulty he could not, in these times, solve. In addition, it should be obvious from the detailed past history of his life that he did not receive the entire neurosis from the relatively unimportant injury. This man's whole attitude toward life had been misshapen since childhood; his mother, during his most impressionable years, had, through excess of care and solicitude, trained him in indecision, lack of self confidence and, worse still, in a habit of playing for sympathy and pitying himself. Later, he demanded and got the same treatment from his older sister-in-law, and, finally, came to the clinic with a wife treating him in the same manner. Can it be doubted that he had chosen this wife because of her resemblance to his mother in this respect? The unfavorable influence exerted by the physician who first saw this patient is worthy of the most serious consideration. With such patients, physicians must be very careful that they do not do more harm than they can possibly do good.

We do not wish to leave the impression that this is the only way in which factors in early life operate to make human beings especially susceptible to posttraumatic neuroses. Undoubtedly, other methods of mishandling children produce similar results. Indeed, it is probable that whether a person develops neurasthenia, the anxiety neurosis or hysteria depends, for the most part, on the particular unfavorable childhood influences. Lack of time prevents us from discussing here the method of development of these other neuroses. We wish simply to emphasize the fact that posttraumatic neuroses are due to factors dating back to childhood, that they are merely precipitated and not really caused by the injury, and that in no sense can they be considered as due to "organic" changes in the brain, as some so fondly imagine.

One further important feature of these neuroses must be emphasized, and that is the unconscious nature of their operation. No proper understanding of these patients can be attained without a recognition of the unconscious nature of the fundamental difficulty. In the case cited, the neurotic behavior of the patient was the only behavior he knew in the face of difficulty. It was a habit as unconscious as his manner of walking or the intonation of his speech. The assumption that such patients are consciously simulating disease does them an injustice and tends to increase still further their difficulty of adjustment and to prevent finally any proper understanding of their condition.

5. Schaller, Walter, and Somers, M. R.: Psychogenic Factors and Precipitation Point in the Posttraumatic Neuroses, J. A. M. A. 93:1967-971 (Sept. 28) 1929.

TREATMENT

The treatment of the posttraumatic neuroses is one of the most difficult tasks facing the physician. The fundamental nature of the personality defect and the early age at which it is established make its eradication a herculean task. It amounts, in effect, to the reeducation of the individual in a new attitude toward life and its problems, which is, of course, especially in older persons, all but impossible. This reeducation is especially difficult because it involves training in a self-centered, egoistic individual to have less concern about himself and more about the outside world. However, very often a partial adjustment can be effected. Certain fundamental rules for accomplishing this can be laid down.

In the first place, it is folly to antagonize the patient by arguing with him. To adopt the attitude that he has suffered no physical injury may be necessary, but one should not, therefore, insist that he has no real symptoms. The prime rule here is to make oneself the patient's friend, to secure his confidence, and to appear to be his ally. This involves listening patiently to his story and cooperating with him in his efforts to recuperate.

When this has been done, it is absolutely necessary that all financial controversy be settled once and for all. All settlements of a monetary sort should be made in a so-called lump sum and not in protracted payments intended to continue until the patient is again well. Such long-continued payments have the effect of placing a premium on his illness and keeping the question of his disability constantly open. This point has been repeatedly made by many authors in the past, including one of us (G. W. H.). The final settlement of all claims at once stops litigation and ends all controversy calculated to keep the patient forever insisting on the seriousness and reality of his injury.

The next step is the reestablishment of the patient, as soon as may be possible, in some form of work in which he can effect a transfer of his attention from himself to outside interests. This step is very difficult sometimes and may be possible only after intensive suggestion. One must be careful to give the patient some excuse for recovery. To expect the patient to become free from all symptoms without treatment is almost equivalent to expecting him to admit that his symptoms were "unreal." Therefore, medication, various forms of physical therapy or electrotherapy are very useful in giving him reason to expect improvement and a basis for relinquishing his symptoms. That such treatment may lack a physiologic rationale, in view of the fact that no physical basis exists for his symptoms, is neither here nor there. The psychologic rationale is ample warrant for such procedure. With these methods, encouragement and optimism find an important place when used tactfully and reasonably.

Such methods, however, must not be unduly prolonged, as they only fix the patient's attention too firmly on his ailments. Consequently a judicious relinquishment of the treatment must be practiced.

With such an approach, the treatment of the posttraumatic neuroses will achieve no little success. Physicians can at least avoid causing patients no end of harm by unwise sympathy, apprehension over their condition, and suggestion of further symptoms. There is a place here for great tact and appreciation of human nature, qualities that can come only with long experience in dealing with these unfortunate patients.

8 South Michigan Avenue.

MENINGITIS DUE TO THE INFLUENZA BACILLUS OF PFEIFFER (HEMOPHILUS INFLUENZAE)

A STUDY OF ONE HUNDRED AND ELEVEN CASES, WITH FOUR RECOVERIES

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NEW YORK

The first authentic case of influenza bacillus meningitis was described by Slawyk [1] in 1899. Pfeiffer himself supervised the bacteriologic work. Earlier cases in which gram-negative bacilli were demonstrated were reported by Pfuhl,[2] Haedke [3] and Fraenkel,[4] but the bacteriologic studies were inconclusive. During the years that followed a few scattered cases were reported, but it was not until 1911 that a real impetus was given to the study of influenza bacillus meningitis by Dr. Martha Wollstein,[5] who reported eight cases that she had studied in a little more than a year. She made a careful analysis of the spinal fluids and did virulence tests on the strains of the bacilli, including the experimental production of the disease in monkeys, and treated successfully two of these monkeys with a serum that she had prepared by immunizing goats. In these publications the literature was carefully reviewed.

TABLE 1.—*Distribution of Most Common Forms of Meningitis*

Meningococcic meningitis	1,216
Tuberculous meningitis	963
Pneumococcic meningitis	309
Streptococcic meningitis	203
Influenza bacillus meningitis	111
Staphylococcic meningitis	27

Since 1911 numerous articles on influenza bacillus meningitis have appeared, but most of these referred to small numbers of cases. In 1921 thirty-two cases with one recovery were reported by Dr. Josephine B. Neal.[6] After a careful study of all factors bearing on influenzal meningitis and a complete review of the literature, Rivers,[7] in 1922, reported twenty-three cases with one recovery.

Jenks and Radbill [8] described thirty-two cases of influenza bacillus meningitis with no recoveries, occurring from 1921 to 1929.

Hart [9] reported thirty-two cases with two recoveries.

Our main object in this paper is to report 111 cases that we have seen in the past twenty-three years in connection with our study of meningitis and other acute infections of the central nervous system.

Influenza bacillus meningitis ranks fourth among the types of purulent meningitis. Table 1 shows the distribution of the most common forms of meningitis that we have seen.

From the Bureau of Laboratories, Department of Health.

1. Slawyk: Ztschr. f. Hyg. **32:** 443, 1899.
2. Pfuhl: Berl. klin. Wchnschr. **29:** 979-1009, 1892.
3. Haedke: München. med. Wchnschr. **44:** 806, 1897.
4. Fraenkel, E.: Ztschr. f. Hyg. **27:** 315, 1898.
5. (*a*) Wollstein, Martha: Influenzal Meningitis and Its Experimental Production, Am. J. Dis. Child. **1:** 42 (Jan.) 1911; (*b*) J. Exper. Med. **14:** 73, 1911.
6. Neal, Josephine B.: Arch. Pediat. **38:** 1 (Jan.) 1921.
7. Rivers, T. M.: Influenzal Meningitis, Am. J. Dis. Child. **24:** 102 (Aug.) 1922.
8. Jenks, H. H., and Radbill, S. X.: Arch. Pediat. **48:** 1 (Jan.) 1931.
9. Hart, A. P.: Canad. M. A. J. **27:** 163 (Aug.) 1932.

The symptomatology of influenza bacillus meningitis differs in no way from that of meningococcic meningitis. Since so large a percentage of cases occurs in infancy, it may be well to emphasize that the early symptoms at this age are not conspicuously referable to the central nervous system. The earliest signs are usually those of a gastro-intestinal disturbance, irregular fever, irritability and a bulging fontanel. A diagnosis at this stage can be made only by lumbar puncture, and this is indicated in babies who are sick with indefinite symptoms that do not yield readily to treatment.

TABLE 2.—*Distribution by Age and by Sex*

Age of Patient	Sex		Total Number of Cases
	Male	Female	
1, 2, 3 months	1	2	3
4, 5, 6 months	6	8	14
7, 8, 9, 10, 11, 12 months	8	9	17
Total under 1 year	15	19	34
1 to 2 years	15	13	28
2 to 3 years	5	10	15
3 to 5 years	8	8	16
5 to 10 years	2	7	9
10 to 20 years	4	0	4
20 to 30 years	2	0	2
30 to 40 years	1	0	1
50 to 60 years	0	1	1
60 to 70 years	0	1	1
Total	52	59	111

Table 2 summarizes the distribution by age and sex.

Influenza bacillus meningitis is essentially a disease of infancy and early childhood. More cases occurred in the first year of life than in any other one year, and more than half of the total number of cases (sixty-two) occurred in the first two years of life. More cases occurred in females than in males. This is contrary to the distribution in meningococcic meningitis, poliomyelitis and epidemic encephalitis.

Ten of the 111 cases were in Negroes. This is a very much higher proportion than occurred in other acute infections of the central nervous system, except perhaps in tuberculous meningitis.

Table 3 shows the incidence of the cases by year and by season. By far the largest number of cases occur in the last quarter of the year, following closely the peak of the curve of pneumonia incidence. In meningococcic meningitis the largest number of cases occur during the first half of the year. The distribution by year shows nothing notable except that during the influenza epidemic in 1918 and 1919 there was no increase in the number of cases of influenza bacillus meningitis. The largest number of cases was seen in 1932, a year that was not marked by any unusual incidence of infection of the upper respiratory tract in New York.

There has been a great deal of discussion as to whether influenza bacillus meningitis is a primary or a secondary disease. In the earlier days when B. influenzae was considered the cause of clinical influenza, many observers expressed the opinion that influenza bacillus meningitis was a complication of a respiratory infection.

Rivers [7] states that 74 per cent of 171 cases studied by him were probably primary infections. He also calls attention to the fact that, in not a few instances, pneumonia and other lesions accompanying the meningitis are not due to the influenza bacilli.

Hart [9] states that ten of his thirty-two cases appeared to be primary and that in practically none was it a complication of a respiratory infection.

Of our 111 cases, 68, or 61 per cent, were apparently primary.

In many other instances the preceding or concomitant pneumonia, otitis media or other lesions were in all probability not caused by the influenza bacillus. Since this fact has been brought out by other writers, it seems fair to assume that in a large percentage of cases influenza bacillus meningitis is a primary disease.

We have done blood cultures on eight of our patients and, of these, seven were positive. In other cases there was evidence of a generalized infection; for instance, five patients had a hemorrhagic rash and three patients had joint involvement, in one of which the organisms were recovered from the purulent joint exudate. Rivers [7] reported eight positive blood cultures in eighteen cases but believed that with suitable mediums the percentage would have been higher. Hart [9] did blood cultures in seven instances, of which four were positive.

LABORATORY EXAMINATION

Blood cultures should be done more regularly in influenza bacillus meningitis. The blood count shows a high polymorphonuclear leukocytosis. In our own series the leukocytes ranged from 9,000 to 36,000, and the polymorphonuclears ran as high as 92 per cent. Rivers,[7] Jenks and Radbill,[8] and Hart [9] report similar observations.

The spinal fluid examination in influenza bacillus meningitis differs in no way from other forms of purulent meningitis. The fluid is cloudy to purulent in appearance and shows a marked pleocytosis with a preponderance of polymorphonuclears, a variable increase in protein and, when the disease is well established, a decided decrease in the sugar content. The influenza bacillus is demonstrated by smear and culture. A positive diagnosis must be made by cultural examination.

TABLE 3.—*Seasonal Distribution of Influenza Bacillus Meningitis*

Year	January February March	April May June	July August September	October November December	Total
1912	..	2	..	..	2
1913	..	..	1	1	2
1914	..	..	1	1	2
1915	..	..	..	3	3
1916	1	2	1	2	6
1917	..	..	2	2	4
1918	..	1	1	3	5
1919	..	..	1	7	8
1920	..	..	1	1	2
1921	..	1	1	1	3
1922	1	3	1	5	10
1923	3	1	..	1	5
1924	1	..	..	2	3
1925	1	..	..	..	1
1926	1	1	2	..	4
1927	2	2	1	1	6
1928	2	..	..	3	5
1929	..	..	..	4	4
1930	2	2	1	..	5
1931	5	1	..	4	10
1932	4	7	4	2	17
1933, Jan. to July 1	..	4	..	..	4
Total	23	27	18	43	111

It is interesting to note that strains of the influenza bacillus isolated from cases of influenza bacillus meningitis tend to fall into one group, while the strains of the bacillus obtained from other sources show no tendency to grouping. This was first demonstrated by Povitzky [10] in our laboratories and was subsequently corroborated by Rivers and Kohn.[11] Out of fifty-eight

10. Povitzky, Olga R., and Denny, H. T.: J. Immunol. **6**: 65 (Jan.) 1921.
11. Rivers, T. M., and Kohn, L. A.: J. Exper. Med. **34**: 477 (Nov.) 1921.

cultures studied by Povitzky, twenty-seven were identical with the predominating group; eighteen were closely related to the predominating group and thirteen were heterogeneous. The bacteriology of influenza bacillus meningitis is described in detail by Povitzky [11a] in another paper.

PATHOLOGY

The lesions in influenza bacillus meningitis differ in no essential particular from those found in other forms of purulent meningitis. The brain is usually tense, congested and edematous. Occasionally there is distinct flattening of the convolutions. There may be marked engorgement of the superficial cerebral vessels without any conspicuous exudate. More often, however, the surface of the brain is covered with a patchy, yellowish green, thick, purulent exudate, which is most abundant at the base, surrounding the optic chiasm, the peduncles, the inferior surface of the pons and medulla and frequently the cranial nerves. Accompanying the blood vessels, the exudate extends up also on the convex surfaces of the brain. There may be thrombi in any of the cerebral sinuses or in the meningeal veins of the convexity. Frequently there are scattered over the brain surface minute hemorrhagic spots.

The ventricles are, as a rule, distended and contain a turbid or purulent fluid. In protracted cases, however, the ventricular fluid may be clear. On rare occasions there are ventricular hemorrhages. The choroid plexus is usually found extremely engorged and covered with a greenish, fibrinous exudate.

The superficial layers of the brain substance are almost invariably involved, showing engorgement of the vessels and numerous diffuse hemorrhagic areas. In the protracted cases there may be considerable involvement of the cerebral parenchyma. In instances of very severe infection there may occur extensive tissue necrosis in the involved portions of the brain. Minute abscesses may be present; in rare instances, large abscesses occur.

Microscopic examination shows that the exudate which infiltrates the pia-arachnoid consists of fibrin, a large number of polymorphonuclear leukocytes, a few red corpuscles, lymphocytes and large polyblasts. Occasionally the predominant cell may be mononuclear. There is marked vascular congestion with margination of leukocytes. The superficial layers of the brain in the inflamed areas often show minute hemorrhages and very marked cell infiltration. There may be perivascular lymphocytic infiltration. Various stages of degeneration can usually be demonstrated in the neurons.

Changes similar to those just described may be found in the cord, but these, as a rule, are much less severe than those in the brain. The inflammatory process may extend along the anterior or posterior nerve roots.

In protracted cases there may occur an organization of the exudate, with the formation of fibrous strands in the meninges, particularly at the base of the brain. These changes may lead to the development of an internal hydrocephalus. Many clinicians have assumed that extensive adhesions are more common in influenzal than in other forms of purulent meningitis. In our pathologic study we have not been able to confirm this assumption.

It may be of interest to mention briefly the changes in other parts of the body. Toxic degenerative changes in the liver and kidneys are quite common. Bronchopneumonia is fairly common. Endocarditis and acute splenitis occur occasionally. In rare instances inflammatory and degenerative changes in the suprarenals have been observed. Arthritis, peritonitis and gastritis are occasionally found. Otitis media, mastoiditis or sinusitis are found not infrequently, but these are not necessarily caused by the influenza bacillus.

COURSE OF THE DISEASE AND TREATMENT

While influenza bacillus meningitis may occasionally run a fulminating course, the disease is frequently prolonged. This has been commented on by many writers. In our series of cases the duration in the greatest number was between ten and twenty days. In thirteen cases it was between thirty and sixty days or longer. This prolonged duration makes it possible to test out different forms of treatment. In searching for methods of therapy, efforts have naturally been made to produce an effective serum.

The first serum for the treatment of influenza bacillus meningitis was developed by Wollstein,[9b] who immunized goats with strains of the influenza bacillus and was able to treat successfully two monkeys in which she had produced influenza bacillus meningitis experimentally. This serum was used in two recoveries reported by Torrey.[12] We have used this serum in five cases; in three of these only one or two injections were given; in the other two, the injections were repeated about ten times in one instance and fifteen times in the other. The last two patients showed temporary improvement clinically; the organisms decreased greatly in number and became largely intracellular, but death finally resulted.

Since 1920, horses have been immunized at the research laboratory in New York City with strains of the influenza bacillus found by Povitzky to predominate in cultures of spinal fluids from cases of influenza bacillus meningitis.

Antiinfluenza serum has also been prepared under the direction of Dr. Dorothy Wilkes-Weiss of Washington University, St. Louis, and by Hugh K. Ward and Joyce Wright [13] of Harvard.

For the last two years, Dr. Margaret Pittman has been preparing a serum at Rockefeller Institute, and there is to be published a report of cases treated under her direction.

With any form of treatment, the mortality has been exceedingly high. Bloom [14] collected from the literature up to March, 1930, a total of 302 cases with a mortality of 92.05 per cent. Of our 111 patients, four recovered, giving a mortality of 96.4 per cent.

Table 4 gives a list of recoveries collected from the literature, to which we have added three of our own and one reported to us personally by Dr. Benjamin Kramer. Undoubtedly a number of recoveries have never appeared in the literature.

A study of the treatment of these thirty-five patients who recovered shows that twenty-six had lumbar punctures only or lumbar punctures supplemented by nonspecific therapeutic measures. The use of "convalescent serum" is mentioned in three instances. This, however, cannot be regarded as specific therapy, since the serum was obtained from individuals who had recovered from clinical influenza, which is not now considered to be caused by the influenza bacillus. It seems obvious, therefore, that lumbar puncture is an important thera-

11a. Povitzky, Olga R.: Science **78**: 537 (Dec. 8) 1933.

12. Torrey, R. G.: Am. J. M. Sc. **152**: 403 (Sept.) 1916.

13. Ward, H. K., and Wright, Joyce: J. Exper. Med. **55**: 223 (Feb.) 1932.

14. Bloom, C. J.: New Orleans M. & S. J. **83**: 455 (Jan.) 1931.

peutic measure. Furthermore, the use of antimeningococcus serum may be of value in a nonspecific manner. Two patients received an autogenous vaccine, and in one of these the antiinfluenza serum also was used. Only eight patients received the antiinfluenza serum. Of these, four patients were in our own group, and, as will be discussed later, in none of them could the use of the specific serum be regarded as a determining factor in the recovery. However, we have observed a number of instances in which the use of the serum has been followed by a period of improvement, remarkable though temporary, in the patient's clinical condition and in the spinal fluid finding.

There has been a tendency of late to employ the intracarotid route for the injection of serum and chemical agents in cases of meningitis. We have never used nor advocated this method. In the first place, we can see no advantage from its use, since the rapidity of the circulation of the blood is so great. In the second place, one instance has been under our observation and others have been reported to us in which thrombosis of the cerebral vessels followed this method of injection. We therefore regard it as a dangerous procedure.

There is a certain vogue at present for adding complement to the serum in treating cases of influenza bacillus meningitis. From a theoretical standpoint and

TABLE 4.—*List of Recoveries*

Case	Author	Year	Age	Sex	Treatment
1	Langer: Jahrb. f. Kinderh. **53**: 91, 1901	1901	9 yrs.	♂	Lumbar punctures
2	Mya: Gazz. d. osp. **24**: 208, 1903	1903	9 mos.	..	Lumbar punctures
3	Thomesco and Grasceski: Bull. de la Soc. d. sc. méd. de Bucharest, 1904, no. 2; abstr. Rev. Neurol. **13**: 44, 1905	1904	7 yrs.	..	Lumbar punctures
4	Cobor: Am. J. M. Sc. **137**: 74, 1909	1909	33 yrs.	♂	Lumbar punctures
5	Batten: Lancet **1**: 1677, 1910	1910	14 mos.	♀	Lumbar punctures; antimeningococcus serum; methenamine
6	Sayce: Australian M. J. **16**: 25, 1911	1911	4 yrs.	♂	Lumbar punctures; intravenous injection of electragol daily for 1 week
7	Klinger: Cor. Bl. f. Schwerz. Aerzte **42**: 1280, 1912	1912	Years	..	
8	Spillmann and Bench: Province méd. **26**: 433, 1913	1913	Adv. age	♂	Lumbar punctures; antimeningococcus serum
9	Hill and Packard: Lancet-Clin. **113**: 223, 1915	1915	4 mos.	♂	Lumbar punctures
10	Packard: Ann. Otol. Rhin. & Laryng. **25**: 706, 1916	1916	11 yrs.	♀	Lumbar punctures; antimeningococcus serum; antiinfluenza serum
11	Torrey: Am. J. M. Sc. **152**: 403, 1916	1916	11 yrs.	♀	Lumbar punctures; antimeningococcus serum; antiinfluenza serum
12	Johnson: Arch. Pediat. **26**: 82, 1919	1919	3 yrs.	♂	Lumbar punctures; convalescent serum intraspinally and subcutaneously
13	Stone: Texas State J. Med. **15**: 318, 1920	1920	15 yrs.	♀	Lumbar punctures
14	Litchfield: M. J. Australia **1**: 104, 1920	1920	23 mos.	♀	Lumbar punctures; autogenous vaccine
15	Christiansen and Kristensen: Ugesk. f. Laeger **83**: 551, 1921	1921	2 yrs.	♂	Lumbar punctures; antimeningococcus serum
16	Neal: Arch. Pediat. **38**: 1, 1921	1921	2½ yrs.	♀	Lumbar punctures; vaccine intraspinally; anti-influenza serum
17	Rivers: Am. J. Dis. Child. **24**: 102, 1922	1922	13 mos.	♀	Lumbar punctures
18	Hadfield: J. Neurol. Psychopath. **3**: 342, 1923	1922	14 yrs.	♂	Lumbar punctures
19	Jordan: Rhode Island M. J. **7**: 8, 1924	1924	16 yrs.	♂	Lumbar punctures; antimeningococcus serum; draining and washing subarachnoid space with saline
20	Kristensen and Christensen: Acta med. Scandinav. **60**: 1, 1924	1924	8 yrs.	♂	Lumbar punctures; antipneumococcus serum
21	Schnyder and Urech: Schweiz. med. Wchnschr. **55**: 549, 1925	1925	4 yrs.	♂	Lumbar punctures; antimeningococcus serum
22	Turner: J. Iowa M. Soc. **16**: 400, 1926	1926	6½ yrs.	♂	Lumbar punctures; antimeningococcus serum
23	Signorelli: Proc. Louisiana State Pediat. Soc. Meet., April, 1929	1929	7 yrs.	♀	Lumbar punctures
24	Bloom: New Orleans M. & S. J. **83**: 455, 1931	1930	10 mos.	♂	Lumbar punctures; convalescent serum
25	Dabney: Laryngoscope **41**: 14, 1931	1931	15 yrs.	♀	Lumbar punctures; methenamine
26	Gibbens: Lancet **1**: 291, 1931	1931	5 yrs.	♂	Lumbar punctures; antimeningococcus serum; intraspinally and intravenously
27	Johnson: J. M. Soc. New Jersey **29**: 311, 1932	1932	2 yrs.	♀	Lumbar punctures
28	Hart: Canad. M. A. J. **27**: 163, 1932	1932	3 yrs.	♀	Lumbar punctures; transfusion following exsanguination
29	Hart: Canad. M. A. J. **27**: 163, 1932	1932	5½ yrs.	♀	Lumbar punctures; convalescent serum intramuscularly
30	Needles: J. A. M. A. **99**: 1342, 1932	1932	29 yrs.	♂	Lumbar punctures; antimeningococcus serum
31	Ward and Wright: J. Exper. Med. **55**: 235, 1932 (Kuttner)	1932	2½ yrs.	♂	Lumbar punctures; antiinfluenza serum with complement intraspinally
32	Krauer: Personal communication to the authors	1933	2 yrs.	♂	Lumbar punctures; one dose antimeningococcus serum; antiinfluenza plus complement intraspinally and the serum intravenously
33	Neal, Jackson and Applebaum	1933	14 yrs.	♂	Lumbar punctures; antimeningococcus serum; antiinfluenza serum
34	Neal, Jackson and Appelbaum	1933	28 yrs.	♂	Lumbar punctures; antimeningococcus serum; antiinfluenza serum
35	Neal, Jackson and Appelbaum	1933	38 yrs.	♂	Lumbar punctures; antimeningococcus serum; antiinfluenza serum

We strongly favor that further research be done in an effort to produce more potent specific serum. A study of the pathologic condition shows evidence of a diffuse toxemia, as evidenced by the toxic degeneration of many of the viscera. This was strikingly brought out in one patient who showed definite clinical improvement following the use of the serum intraspinally but who finally died. The necropsy revealed the fact that the meningitis had practically subsided, but there were severe toxic changes in many of the viscera.

This suggests the advisability of attempting to develop a highly antitoxic serum. Furthermore, the frequency of positive blood cultures and also the markedly toxic changes in the viscera indicate the use of the serum intravenously as well as intraspinally in the early stages of the disease.

from the results in certain cases under our observation, we fail to see that it is of any value.

The method of application and the underlying principles of forced drainage of the cerebrospinal fluid in cases of influenza bacillus meningitis have been studied thoroughly by Kubie [15] and will not be discussed in this paper. It is conceivable that a thorough "washing out" of the exudate from the perivascular tissues of the brain may also effect a marked elimination of toxins and in this way may influence favorably the course of the disease. We have employed this method of drainage in the last ten cases in our series, with apparent benefit

15. Kubie, L. S., and Shultz, G. M.: Bull. Johns Hopkins Hosp. **37**: 91 (Aug.) 1925. Kubie, L. S.: Intracranial Pressure Changes During Forced Drainage of the Central Nervous System, Arch. Neurol. & Psychiat. **16**: 319 (Sept.) 1926; J. Exper. Med. **46**: 615 (Oct.) 1927; Brain. **51**: 244 (June) 1928; Forced Drainage of the Cerebrospinal Fluid, Arch. Neurol. & Psychiat. **19**: 997 (June) 1928.

in three of these. We believe that the use of forced drainage in meningitis merits further trial.

In view of the high mortality, it may be of interest to report briefly our four cases in which recovery took place:

CASE 1.—Phyllis M., aged 2½ years, had been well except for a mild cough and cold from four to six weeks earlier. She was taken ill suddenly, Aug. 21, 1920, with headache, vomiting and fever ranging from 99 to 102 F. Two lumbar punctures were done, from August 22 to 26. The spinal fluids were sent to us for examination, and the second showed the Pfeiffer bacillus. August 28 the child was seen by us. She presented a typical picture of meningitis. At this time deafness had developed; 25 cc. of spinal fluid was withdrawn and 500 million of a stock influenza vaccine was injected intraspinally. It was not possible to secure the cooperation of the family for regular treatment.

August 31, another lumbar puncture was done, and vaccine was given in a dosage of 1,000 million, mixed with antimeningococcus serum, as the smear from the previous fluid had shown coccoid forms which suggested that the meningococcus might also be present. Further studies showed that this fluid as well as the previous ones contained the Pfeiffer bacillus in pure culture. At this point there was some improvement and no further treatment was permitted until September 9, when the child became suddenly worse with a rise of temperature and vomiting. An autogenous vaccine was used as soon as it could be prepared. September 18, the fluid for the first time gave a negative culture, the previous eight fluids having been positive. At this puncture anti-influenza serum (prepared by the research laboratory but not available until this time) was given in addition to the vaccine. The administration of the combined serum and vaccine was repeated, September 20 and 22. September 24 and October 2, lumbar puncture was done for relief of pressure, no injection being made. Deafness, which had developed early in the illness and had seemed to clear up, returned about the middle of September. Therefore in this particular case the serum cannot be credited for the disappearance of the organisms and the ultimate recovery of the patient.

CASE 2.—M. G., a boy, aged 14 years, was taken ill suddenly, Jan. 28, 1923, with headache, vomiting, chills and a fever. Examination, February 3, showed the patient to be acutely ill. The temperature was 103 F., the pulse 130, and the respiration 18. The signs of meningeal irritation were pronounced, showing marked rigidity of the neck, positive Kernig and Brudzinski signs, and a positive Oppenheim sign on the left side. A diagnosis of meningococcic meningitis was made.

Lumbar puncture was performed, and 30 cc. of cloudy fluid was withdrawn under moderately increased pressure. After removal of the fluid, 20 cc. of antimeningococcus serum was injected intraspinally. The examination of the spinal fluid showed a large increase of cells, practically all polymorphonuclears, a moderate increase in albumin and globulin, and a moderate diminution in the amount of sugar. The smear and culture were both positive for the influenza bacillus.

February 4 there was no change in the clinical picture. Lumbar puncture was performed, 50 cc. of cloudy fluid was removed and 20 cc. of antimeningococcus serum was administered intraspinally. Examination of the spinal fluid was similar to that of the preceding day, with the exception that organisms were found on smear but not on culture.

February 5 the patient's general condition was somewhat worse and the temperature mounted to 105 F. Spinal tap yielded 35 cc. of purulent fluid, which showed a marked increase in protein and marked diminution in the sugar content. Organisms were found both on smear and on culture. Twenty cubic centimeters of antimeningococcus serum was again injected intrathecally.

February 6 the spinal fluid showed absence of sugar and the presence of organisms on smear but not on culture. The patient again received 20 cc. of antimeningococcus serum.

February 7 there was an improvement in the clinical picture. The spinal fluid showed a moderate amount of sugar, and no organisms were found either on smear or on culture. The intraspinal injection of antimeningococcus serum was repeated.

February 9 the patient continued to improve. The spinal fluid was slightly hazy and showed a little increase in protein and a decided rise in the sugar content. The smear and culture remained negative for organisms.

February 10 the child's clinical condition was somewhat worse again. The spinal fluid was again slightly turbid and showed the presence of organisms on smear but not on culture. Twenty cubic centimeters of antimeningococcus serum was given intraspinally.

February 12 the child continued to have an irregular temperature. The spinal fluid showed no organisms either on smear or on culture. Twenty cubic centimeters of anti-influenza serum was injected intraspinally.

February 14 there was a decided improvement in the clinical picture. The spinal fluid was practically clear and remained negative for organisms. The administration of anti-influenza serum was, however, repeated.

From this time on the child continued to improve. A number of lumbar punctures were performed, yielding each time a practically normal spinal fluid. Twenty cubic centimeters of anti-influenza serum was injected intraspinally on February 16 and again on February 18.

February 20 the temperature fell to normal and the patient was free from any signs or symptoms. Recovery was complete.

Following the first four lumbar punctures and the intraspinal injection of antimeningococcus serum there was a definite improvement in the clinical picture, with disappearance of organisms from the spinal fluid. For three days the improvement progressed satisfactorily. The following day, however, organisms reappeared in the spinal fluid. A decided improvement followed the next spinal tap and the intraspinal injection of one dose of antimeningococcus serum. It is to be noted, therefore, that the patient was well on his way toward recovery and the spinal fluid was sterile before the use of anti-influenza serum was begun.

CASE 3.[16]—T. D., a man, aged 28, admitted to Bellevue Hospital Nov. 9, 1931, complained of severe headache, vomiting and pain over the back and in the lower extremities. The onset of these symptoms was rather sudden, six days prior to admission to the hospital. There was also deafness from the second day of illness. A few days before the onset of the present illness, examination showed the usual signs of meningeal irritation. The temperature was only 100 F. The white blood count was 20,000, with 84 per cent polymorphonuclears. A lumbar puncture was done and 25 cc. of cloudy spinal fluid under increased pressure was obtained. On examination, the spinal fluid showed a large increase in cells, mostly polymorphonuclears, marked increase in protein, and absence of sugar. No organisms were found either on smear or on culture. After removal of the fluid, 20 cc. of antimeningococcus serum was injected intraspinally.

November 10 the spinal tap yielded 25 cc. of cloudy fluid, which was positive for the influenza bacillus both on smear and on culture. The intraspinal injection of antimeningococcus serum was repeated. The spinal fluids obtained on November 11 and 12 showed the presence of organisms on smear and culture. Antimeningococcus serum was administered after each puncture.

November 13 the spinal fluid was still cloudy but had a normal sugar content and was negative for organisms both by smear and by culture. Twenty cubic centimeters of anti-influenza serum was injected intraspinally at this time.

The spinal fluids obtained on November 14 and 15 remained negative for organisms. Anti-influenza serum was, however, administered after removal of the fluid in each instance.

November 16 there was marked improvement in the clinical condition. A spinal tap was performed but no serum was given. The spinal fluid remained negative for organisms. Several blood cultures taken during the course of the disease

16. For the privilege of reporting this case, we are indebted to Dr. Alexander Lambert, director, Fourth Medical Division, Bellevue Hospital.

were now reported as negative. A roentgenogram of the skull showed a fissure fracture of the parietal and temporal bones on the left side.

From this time on the patient continued to show progressive improvement. Several more spinal taps were done for relief of pressure. On examination, these fluids were practically normal. With the exception of deafness in the left ear and moderate neuritic pains in the legs, he made a good recovery. He was discharged from the hospital, December 12.

November 13, when the use of anti-influenza serum was started, the spinal fluid had already become sterile and had a normal sugar content. This improvement followed the performance of four lumbar punctures and the intraspinal administration of antimeningococcus serum after each spinal tap. The recovery cannot, therefore, be credited, at least in any great measure, to the use of specific serum.

Case 4.—William M., aged 38, seen, July 21, 1932, had been admitted to the hospital, May 22, 1932, suffering from a severe injury to the head. A diagnosis of fracture of the skull was made clinically but was not confirmed by x-rays. May 22 a lumbar puncture was done, revealing a bloody spinal fluid. The blood count showed 23,000 leukocytes with 86 per cent polymorphonuclears. June 23 there was severe headache, vomiting and a temperature of 104 F., with other signs of meningeal irritation. May 25 the second spinal puncture was done. The fluid was practically clear, with a slightly yellowish tinge. There was some increase in protein and a normal sugar. May 27 a third puncture was done, which revealed a cloudy fluid, and antimeningococcus serum was administered. This procedure was repeated twice on the 28th and once on the 29th. On the 30th it was reported that the spinal fluid had yielded influenza bacillus on culture.

During June and up until the latter part of July, the patient's condition remained about the same. He continued to have a fever and was irrational much of the time. The signs of meningeal irritation persisted. Lumbar punctures were done from time to time. The spinal fluid withdrawn on July 8 still showed organisms. July 21, 20 cc. of anti-influenza serum was administered intraspinally. The following day there was a severe serum reaction. No more serum was given. As the serum reaction subsided, the patient appeared much improved. His mentality entirely cleared and he was discharged, August 28, completely recovered.

It is difficult to attribute the favorable outcome to a single dose of anti-influenza serum. It is more likely that the repeated spinal drainage was the important factor in this patient's recovery.

SUMMARY

1. We have correlated certain data in regard to 111 cases of influenza bacillus meningitis under our observation.

2. Influenza bacillus meningitis is essentially a disease of young children.

3. The evidence points to the fact that influenza bacillus meningitis is usually a primary disease and that it is caused by strains of influenza bacilli that tend to fall in one group.

4. The pathologic examination usually shows severe toxic changes in the viscera. There is no particular tendency to the development of adhesions in the meninges or to the formation of abscesses in the brain.

5. In the thirty-five cases in which recoveries have been reported, four have been under our observation.

6. At present there is no adequate method of treatment. Further research should be done toward the development of a more potent serum with high antitoxic as well as antibacterial properties. Serum may be given early intravenously as well as intraspinally.

Foot of East Sixteenth Street.

GRANULOCYTOPENIA

REPORT OF TWO CASES

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It has long been appreciated that a marked decrease in the white blood cell count in the presence of acute infection is an unfavorable prognostic sign. It is only during recent years, however, that granulocytopenia has been recognized as a definite clinical entity. The two cases of this condition reported here presented several unusual features. Both patients were middle-aged women, but the interesting thing is that they were sisters, living in the same household, the recurrence in one and the single attack in the other occurring within about two months. Also, contrary to the usual textbook description, there was practically no angina, but rather there were numerous necrotic lesions in the skin and subcutaneous tissues. Another remarkable observation was that during her second attack patient 1 lived for at least twenty-four days without any granular cells, except a few myeloblasts, and then had a complete remission of the blood picture, although she finally died of sepsis.

Since the cause of this condition is not known, one cannot say which points in the family history are relevant and which not. Several facts in the family history of these patients may be recorded. The youngest sister in the family died at the age of 32 of a severe and generalized arthritis deformans. The only brother was epileptic and died in an institution at the age of 35. The oldest sister is living, aged 66. Patient 1 had scarlet fever with nephritis at 13 years and a hysterectomy for uterine fibroids at 45. Patient 2 had a long-standing bony ankylosis of the right hip, an arthritic deformity.

REPORT OF CASES

Case 1.—*First Attack.*—Miss L. M., aged 63, short and rather obese, had a past history that was uneventful until the time shortly preceding the first attack of granulocytopenia. In December, 1931, she had a fairly severe attack of herpes zoster and during the next two months a mild infection of the accessory nasal sinuses. These conditions seemed to clear up satisfactorily.

The present illness began rather indefinitely during the middle of April, 1932. The chief complaint was extreme fatigability in a woman who had always been very active. April 24, the patient fainted and was put to bed. The throat was very slightly reddened, the temperature was slightly elevated, and a tentative diagnosis of influenza was made. April 26, a blood count showed the leukocytes to number only 250 per cubic millimeter, with no granular cells to be seen on a stained smear. It was noted then that the patient had a number of small necrotic areas on the fingers which looked like abscesses but contained no pus. She was placed in a hospital, and on April 27 the blood count was as follows: hemoglobin (Newcomer), 75 per cent; red blood cells, 4,579,000; white blood cells, 350; lymphocytes, 100 per cent. She was given one treatment of roentgen exposure to the long bones, and on April 28 leukocyte extract was started. This was given, from two to four doses of 10 cc., each day for six days. Later some pentnucleotide was obtained, but only a few doses were given, as the blood picture was improving. The return of immature granular cells began on the fifth day of treatment with leukocyte extract, a fact which was taken as evidence that it was the result of the therapy and not a spontaneous remission. The white cell count rose rapidly to a maximum of 31,000 per cubic millimeter in the next few days. The granular cells appeared first as myeloblasts and progressed to maturity through the stages of the myelocyte, the unsegmented juvenile form and, finally, the

mature segmented polymorphonuclear neutrophil. The details of the blood studies are shown in table 1.

During the first week of illness the patient was irrational and at times stuporous, had a high temperature and seemed very gravely ill. An area of superficial gangrene appeared in the right anterior axillary region, and there developed a thrombosis of the venous channels of the right arm. After the with a normal differential count. The patient seemed to be as well as before her illness.

Second Attack.—About three weeks after the death of her sister, patient 2, and almost exactly one year after the initial attack, the patient had a recurrence. She was quite well, both subjectively and objectively, April 13, 1933, but the next day complained that several small cuts and abrasions on her fingers

TABLE 1.—*Blood Studies in First Attack*

Date	Hemoglobin, per Cent	Red Blood Cells, Thousands	White Blood Cells	Polymorphonuclear Neutrophils Segmented, per Cent	Polymorphonuclear Neutrophils Unsegmented, per Cent	Myelocytes, per Cent	Myeloblasts, per Cent	Lymphocytes, per Cent	Monocytes, per Cent	Specific Therapy
4/27/32	75	4,570	330	..	..	..	..	100	..	Leukocyte extract, 40 cc.
4/28/32	....	.....	700	..	..	..	..	100	..	Leukocyte extract, 30 cc.
4/29/32	....	.....	450	..	..	..	..	100	..	Leukocyte extract, 20 cc.
4/30/32	75.5	4,339	300	..	..	..	..	100	..	Leukocyte extract, 20 cc.
5/ 1/32	....	.....	800	..	..	..	..	98	2	Leukocyte extract, 10 cc. Pentnucleotide, 10 cc.
5/ 2/32	75.5	4,550	1,000	..	2	2	36	48	12	Leukocyte extract, 20 cc. Pentnucleotide, 10 cc.
5/ 3/32	....	.....	4,100	1	..	28	22	48	1	Leukocyte extract, 10 cc. Pentnucleotide, 10 cc.
5/ 4/32	....	.....	17,600	11	22	31	18	15	3	
5/ 5/32	....	.....	31,200	40	16	7	5	21	2	
5/ 9/32	60.1	4,000	16,400	60	10	..	..	22	..	
5/15/32	80.2	4,540	5,900	44	16	2	..	36	..	
5/22/32	....	.....	10,450	32	26	..	..	20	2	
5/26/32	....	.....	14,000	74	13	4	..	8	1	
5/29/32	....	.....	10,000	63	7	1	..	24	5	

TABLE 2.—*Blood Studies in Second Attack*

Date	Hemoglobin, per Cent	Red Blood Cells, Thousands	White Blood Cells	Polymorphonuclear Neutrophils Segmented, per Cent	Polymorphonuclear Neutrophils Unsegmented, per Cent	Myelocytes, per Cent	Myeloblasts, per Cent	Lymphocytes, per Cent	Monocytes, per Cent	Specific Therapy
4/14/33	..	.....	2,050	..	..	..	..	100	..	Pentnucleotide, 20 cc. Liver extract, 2 cc.
4/15/33	..	.....	.....	..	..	..	..	..	..	Pentnucleotide, 20 cc. Liver extract, 2 cc.
4/16/33	..	.....	.....	..	..	..	..	..	..	Pentnucleotide, 20 cc. Liver extract, 2 cc.
4/17/33	..	.....	.....	..	..	..	..	..	..	Pentnucleotide, 20 cc. Liver extract, 2 cc.
4/18/33	87	4,980	1,200	..	..	..	..	100	..	Pentnucleotide, 20 cc.
4/20/33	..	.....	.....	..	..	..	2	98	..	Pentnucleotide, 10 cc.
4/21/33	..	.....	.....	..	..	..	3	97	..	Pentnucleotide, 10 cc.
4/22/33	..	.....	500	..	..	..	12	88	..	Leukocyte extract, 30 cc.
4/23/33	..	.....	1,200	..	..	..	4	96	..	Leukocyte extract, 30 cc.
4/24/33	..	.....	.....	..	..	..	..	100	..	Leukocyte extract, 20 cc.
4/29/33	..	.....	1,300	..	..	..	4	96	..	
5/ 1/33	..	.....	.....	..	..	..	7	93	..	Addisin, 10 units
5/ 2/33	..	.....	.....	..	..	..	6	92	2	Addisin, 10 units
5/ 3/33	..	.....	650	..	..	..	4	94	2	
5/ 8/33	..	.....	.....	6	32	21	1	35	5	
5/ 9/33	70	3,750	8,100	25	30	22	2	18	3	
5/10/33	..	.....	20,240	19	29	16	2	28	6	
5/16/33	..	.....	35,300	81	7	..	..	9.5	2.5	
5/20/33	60	3,104	20,100	76	11.5	..	..	8.5	4	
5/29/33	35	2,100	11,300	50	24	1	2	12	1	
6/ 7/33	..	.....	8,600	73	13	..	..	13	1	
6/10/33	..	.....	14,850	68	25.5	1.5	..	5	..	

granular cells returned to the blood stream, pus appeared in all the necrotic areas, and a large slough occurred in the right axillary region. The resulting sinus finally healed after about six weeks. The temperature became normal about May 6 and remained so, except for occasional insignificant rises, in spite of a unilateral parotitis, which developed on May 8. The patient became suddenly quite rational, May 10, and, although convalescence was slow, it eventually ended in what seemed a complete recovery by late summer. Occasional blood counts were made throughout the following year, and the leukocytes always numbered between 5,000 and 7,000 per cubic millimeter, were not healing properly and were somewhat painful. She also felt rather tired and had no appetite. A leukocyte count was made immediately and showed only 2,500 cells per cubic millimeter, with lymphocytes 100 per cent. Pentnucleotide was started at once, 10 cc. being injected intramuscularly, twice a day for five days, and then once a day for several more doses. Ampoules solution liver extract No. 343, 2 cc. a day for four days, was also given into the muscle. The patient was nauseated and uncomfortable for a short time after each injection. As there was no improvement in the blood picture, leukocyte extract was given for the next three days. April 20, two myelo-

blasts were seen in counting 100 white cells, and a few of these immature forms were seen in all subsequent smears made during the following two weeks, but there was no evidence of any tendency to maturation of these early granular cells.

Until April 21 the patient was fairly well, except for weakness; her appetite was quite good, she had very little fever, and there was no soreness nor redness of the throat. A number of indurated, red areas developed in the skin, one at the mucocutaneous border of the right nostril, one in the left axillary region, and many smaller ones on the body and arms. There was no pus formation in any of these, but a smear made of the secretion obtained from one lesion showed great masses of bacteria which in morphology and arrangement looked like staphylococci. April 21 the patient began to be quite sick, and on April 23 there was collapse, a fever of 103 F., auricular fibrillation, and râles at the bases of the lungs. The cardiac irregularity responded very well to digitalis therapy, but the signs in the chest persisted for some time. There was dyspnea and evidence of a pneumonic process in the right lung. The patient was irrational most of the time, although she sometimes responded fairly well to questions.

The various skin lesions seemed to shrink and dry for a few days, but no pus developed and they did not heal. The prognosis was regarded as very poor. May 10 the patient was given 10 units of addisin, kindly furnished by Dr. Roger Morris of Cincinnati, and on May 3 an additional dose of 10 units. There was no change in the blood smears during the next three days except for the appearance of from 1 to 2 per cent monocytes. No count nor smear was made, May 7, but on May 8 there was a most surprising change in the blood picture. The smear showed: segmented polymorphonuclears, 6 per cent; unsegmented polymorphonuclears, 32 per cent; myelocytes, 21 per cent; myeloblasts, 1 per cent; lymphocytes, 35 per cent, and monocytes, 5 per cent. After this the leukocyte count increased rapidly, reaching at one time 36,300 per cubic millimeter, and maturation of the granular cells progressed steadily. The general condition of the patient did not change much, except for the fact that the indurated areas in the skin and subcutaneous tissues developed into abscesses that were characterized by collections of large amounts of pus with very little induration or inflammatory reaction around them. This was interpreted as evidence that the infection was blood borne. There was also present for some days a frequent, harassing cough, productive of fairly large quantities of purulent sputum, so that the presence of a lung abscess was suspected. The abscesses in the skin were incised and evacuated as they became fluctuant, but new ones continued to form. There was a large one in the right groin, following later by a thrombophlebitis of the right femoral vein. During the last week of life, fluctuation was detected in the lower part of the right thigh and an incision was made, through which about 500 cc. of pus was evacuated.

Throughout the latter half of the illness the patient had a fever of from 100 to 103 F. practically every day; she was more or less irrational or comatose most of the time, and, although the total leukocyte count and the differential formula were now quite in keeping with her condition, all hope for her recovery was abandoned. Death occurred, June 15, after an illness of two months. Table 2 shows the detailed blood studies.

Pathologic Examination.—An autopsy was performed about four hours after death, the body having been already embalmed. A midline incision was made through a thick panniculus of fat, and the breastplate was laid back.

The heart and pericardium were not remarkable.

There was a collection of pus along the intercostal space between the second and third ribs on the right, and an adhesion of the right upper lung to the chest wall. On the left the parietal pleura was densely adherent to the parietal pericardium from the level of the fourth rib down. The lower left lobe was adherent to the chest wall. There was one abscess about 4 cm. in diameter, and several smaller ones in the right upper lobe; multiple small abscesses were scattered throughout the left lung.

The spleen was bound by adhesions to the omentum, diaphragm and stomach. It was moderately enlarged, weighing 312 Gm., and the pulp was rather friable. On section, several abscesses about 4 cm. in diameter were seen.

The gallbladder and liver were not remarkable, aside from some fibrosis and perihepatitis.

The kidneys were small but appeared normal in structure. There was a perinephric abscess at the superior pole of the left kidney.

There was an organized blood clot, and some purulent exudate in the right femoral vein. In the right thigh was found a large abscess cavity, about 10 cm. by 6 cm., around the lower end of the femur. The bone marrow of the femur was redder than normal.

Microscopic examination of the lung tissue showed areas of necrosis with some inflammatory reaction in the periphery. Many alveoli were filled with mucus and exudate.

Sections of the spleen showed marked congestion. The malpighian corpuscles could not be distinguished. The infiltrating cells were largely mononuclear, but some showed polymorphic nuclei.

In the kidneys there was considerable amount of destruction of the tubular epithelium, congestion of the glomeruli, and fibrosis of the interstitial tissue.

The gallbladder was normal. The liver tissue showed fibrotic changes and large numbers of round cells in the interlobular spaces and around the vascular structures.

Smears of bone marrow, taken from the lower end of the femur, and sections of decalcified bone, taken from the sternum, showed a very active regeneration of the marrow, with many granular cells present.

CASE 2.—Miss A. M., aged 56, had had an arthritic deformity of the right hip and some deformity of the fingers. She had had crops of furuncles at various times in the past. Her illness started during the middle of March, 1933, with what appeared to be a number of furuncles on the neck, hands and arms. These she treated herself, using home remedies. On March 21 she suddenly became very weak and sick, and it was noted then that the lesions in the skin were not abscesses but red, indurated nodules, having necrotic centers. There were no lesions of any mucous surfaces. A blood count was made, which showed a leukocyte count of 477 per cubic millimeter with no granular cells to be seen in the stained smear. Pentnucleotide was started at once, 10 cc. being injected into the muscle, morning and evening, for a total of seven doses. The patient grew steadily worse, lapsed into coma, and died on the evening of March 24, before there was time for any regeneration of the blood. A smear made on the day of death showed only lymphocytes.

COMMENT

The points that were considered to be of particular interest in the cases reported may be summarized briefly: The absence of angina and the presence of skin lesions are, of course, not unique; an increasing number of such instances are being reported. The fact that two sisters should react in the same atypical way might, however, appear to be of significance to those students of the disease who are interested in determining its etiology. In this connection it may be stated that both these patients had been edentulous for many years, since a surprising number of cases have been reported as following the extraction of a tooth. Dennis [1] concludes that pyogenic bacteria may cause granulocytopenia under certain conditions of encapsulation. In the two cases here reported no known focus of infection was present, and none was disclosed at autopsy in case 1. The skin lesions were looked on as distinctly secondary to the lack of granulocytes.

The extremely low leukocyte counts followed by remission are interesting, although comparably low counts are now being reported, also with recovery, following treatment.[2] I have seen no reports in which

1. Dennis, E. W.: Cited in Experimental Agranulocytic Angina, editorial, J. A. M. A. **101**: 368 (July 29) 1933.
2. Jackson, Henry, Jr.; Parker, Frederic, Jr.; Rinehart, J. F., and Taylor, F. H. L.: Studies of Diseases of the Lymphoid and Myeloid Tissues, J. A. M. A. **97**: 1436-1440 (Nov. 14) 1931.

the patient lived for so long a time without demonstrable granulocytes in the circulating blood, as in case 1 during the second attack. For at least twenty-four days there was present only a very low percentage of myeloblasts, a fact that also demonstrates the "maturation arrest" stressed by Fitz-Hugh and Krumbhaar.[3] The satisfactory response in case 1 to leukocyte extract in the first attack, and to addisin, after pentnucleotide and leukocyte extract seemed to fail, in the second attack, are also points worthy of note.

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HODGKIN'S DISEASE OCCURRING SIMULTANEOUSLY IN TWO BROTHERS

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The two most common diseases that cause a progressive glandular enlargement in youth are tuberculosis and Hodgkin's disease. Consequently the diagnosis often lies between these two. These conditions may resemble each other so closely in the early stages of glandular enlargement that the clinical diagnosis between them is almost impossible. Furthermore, there is no absolute evidence of inherited tendencies in Hodgkin's disease or of direct contagion, and the occurrence of more than one case in a single family is of the greatest rarity. The opposite is true of tuberculosis. In the literature are found only a few reports of Hodgkin's disease in more than one member of a family. In 1911 Ziegler [1] stated that there were no recorded cases of the disease in parent and child and that no hereditary predisposition had been demonstrated. Cases in twins have been reported by Peacock [1] and Senator.[1] Degen [1] saw a brother and sister with the disease. Braun,[1] in 1912, reported three cases of malignant disease of lymph glands in a woman and her two brothers. Arkin,[2] in 1926, reported three cases of mediastinal lymphogranuloma in one family, all men, a father, his son, and his nephew (the father's brother's son). In reporting these cases, Arkin states that it may be assumed that the three male members of the family possessed a familial predisposition to mediastinal Hodgkin's disease. Keeping these few introductory remarks in mind, we report two cases of Hodgkin's disease occurring almost simultaneously in two brothers, aged 11 and 13, respectively. As the clinical features and course of both of these cases were almost identical, reporting the case history of one will report that of the other except for a few minor details which will be mentioned during the course of the narrative.

REPORT OF CASES

G. S. aged 11, and P. S., aged 13 years, American born schoolboys of Swedish extraction, were in good health until the onset of their present illness. Both boys had had measles and mumps, but aside from this the past history was negative.

The father is living and well; the mother died eight years ago of bronchopneumonia. According to the father, there were no tumor masses or evidences of glandular enlargement in the mother. Two brothers are living and well; one brother died at the age of 2 weeks of an unknown cause. Four sisters are living and well; one sister died in infancy of an unknown cause.

In January, 1931, the father of the two patients noticed a slight swelling on the right side of the neck of the younger of the boys; this swelling was situated over the right posterior auricular and upper right posterior cervical area; there was no soreness or tenderness of this mass, but it appeared to be getting larger from day to day. One week later, the father noticed the appearance of a similar swelling of the neck of the older of the two boys. The onset and course of the latter swelling was similar to that of the younger brother except that the mass was situated over the left side of the neck. The father took the boys to a local physician, who naturally suspected tuberculous lymph glands and advised the boys to go to a sanatorium for tuberculosis. The boys were in such an institution for thirteen months and, while there, the lymph glands in the neck became so large that they were unable to turn their heads. They lost a few pounds in weight but had no night sweats or chills. Occasionally they would elicit a dry cough but had no dyspnea nor palpitation of the heart. On exertion they both complained of a slight retrosternal pain. Repeated Mantoux tests at the sanatorium were negative and the diagnosis of tuberculosis was never verified. During their stay at the sanatorium they were treated with ultraviolet rays. Shortly before they left the sanatorium, biopsies of cervical tumor masses were made and the pathologic diagnosis was that of lymphoma.

In June, 1932, the two boys came under our observation. At that time physical examination revealed the following picture: Both boys appeared to be well nourished and well developed; there was a very slight pallor of the skin and of the mucous membranes. The skeletal system was normal. On the right side of the neck of the younger boy were various sized multinodular masses involving the right cervical and posterior auricular chains of lymph glands, extending from the lower posterior aspect of the ear down to the root of the neck; there was no adherence of the masses to the skin, and no puckered scars of the skin or draining sinuses were present. On palpation the tumors were not soft or fluctuant but had a resilient firm "art gum" feel. Aside from the glandular enlargement of the right side of the neck there were no other palpable lymph glands. The older boy showed the same lymph glandular change as the younger brother, the only difference being that the left side of the neck was involved instead of the right. The teeth were in fair condition and the tonsils small and atrophic. Examinations of the lungs were negative. The heart, in both boys, showed a soft hemic murmur at the apex; pulses were regular but rapid. In each case the spleen was slightly palpable; otherwise examination of the abdomen was negative. The extremities were normal. Examination of the nervous system revealed normal conditions. The temperatures of the two boys were 103.2 and 103.4 F. (rectal), respectively. Their weights were 79 pounds (35.8 Kg.) and 120 pounds (54.4 Kg.), respectively.

Blood Count

	Younger Boy	Older Boy
Hemoglobin	71% (Dare)	64% (Dare)
Red blood cells	4,400,000	4,840,000
White blood cells	7,700	11,000
Neutrophils	73%	73%
Small lymphocytes	13%	13%
Large lymphocytes	10%	8%
Eosinophils	3%	8%

Examinations of the urines were negative. Results of the blood count are given in the accompanying table. Shortly before death the hemoglobin dropped to 8 per cent (Dare) and the red blood cells in each case were less than 1,000,000. The blood pictures for both boys showed a slight anisocytosis, a slight poikilocytosis, no normoblasts or megaloblasts, no stippling, and no abnormal leukocytes. The Arneth index was normal. There was moderate hypochromacia.[3]

Roentgen examinations of the lungs in both cases were negative.

3. Fitz-Hugh, Thomas, Jr., and Krumbhaar, E. B.: Myeloid Cell Hyperplasia of the Bone Marrow in Agranulocytic Angina, Am. J. M. Sc. **183**: 104 (Jan.) 1932.
1. Cited by Arkin.[2]
2. Arkin, Aaron: Familial Mediastinal Lymphogranuloma, Am. J. M. Sc. **171**: 669 (May) 1926.

3. Stewart, S. G.: Eosinophilic Hyperleukocytosis in Hodgkin's Disease with Familial Eosinophilic Diathesis, Arch. Int. Med. **44**: 772 (Nov.) 1929.

A biopsy was performed on both boys and a diagnosis of Hodgkin's disease was made on both specimens.

Both patients were given palliative high voltage roentgen therapy with the usual results, characterized by a rapid recession in size of the tumor masses but followed by an equally rapid recurrence in the same areas. Symptomatically neither patient showed any improvement but continued to decline rather rapidly from month to month. The oldest boy would manifest a considerable reaction following each roentgen treatment, characterized by chills, high fever and marked weakness. Consequently he did not receive as much roentgen therapy as did his younger brother.

During the course of their illnesses each patient had a daily afternoon rise in temperature and both became progressively weaker, more cachectic and more anemic. One month before their respective deaths, each one showed marked edema of the face, eyelids and ankles; marked pallor (pale-blue-white) to the skin, deep bluish lips, hydrothorax, hydropericardium, loud blowing systolic murmur at the apex, ascites, an enormously enlarged spleen, generalized lymph adenopathy, hemorrhages from the nose, and petechiae. The petechial rash in both boys occurred first over the sternum and then appeared over the legs, arms and trunk, in the order named. The younger of the two brothers died in January, 1933, two years after the onset of his ailment, and the older of the two brothers died in March, 1933, two years and two months after the onset. Permission for postmortem examination in both cases was granted.

An autopsy was performed on P. S., March 27. The body was well developed but markedly emaciated. The skin showed an icterus of 2+ on a basis of 4. The anterior aspects of the chest, abdomen and neck were covered with innumerable petechiae. There were also a moderate number of petechiae over the forearms, knees and feet. The cervical lymph nodes were all moderately enlarged on the right and markedly enlarged on the left, especially the lower halves of the anterior and posterior cervical groups. They were of a firm, rubbery consistency. The axillary and inguinal nodes were barely palpable. Subcutaneous fat was nearly all absent. The abdominal cavity contained about 750 cc. of clear amber fluid. The peritoneal surfaces were smooth and glistening. The liver was 4 cm. below the xiphoid process and 3 cm. below the rib margin at the right anterior axillary line. The liver weighed 2,275 Gm. and was very pale; there were a few yellowish-white nodules through the liver substance, varying from 0.5 to 5 cm. in diameter. The gallbladder was dilated to 13 cm. in length and 5 cm. in diameter at the largest dimensions; it was filled with pale green bile. There was a white nodule the size and shape of an almond in the proximal anterior part of the gallbladder wall. There was an irregular mass of large lymph nodes, together the size of a fist, about the duodenum and obstructing the common duct. All the abdominal lymph nodes, including the mesenteric and the preaortic, were enlarged to from 1 to 5 cm. in diameter. The spleen was enlarged to 900 Gm. On both external and cut surfaces were many firm yellowish-white areas from 0.25 to 2 cm. in diameter. The gastro-intestinal tract was normal throughout. The left kidney weighed 300 Gm.; the right, 270 Gm. They were pale and flabby, with the markings decreased in prominence. The capsules stripped easily. The pancreas, bladder and suprarenals were grossly normal. The left pleural cavity contained about 300 cc. of amber fluid and the right about 100 cc. Both lungs showed moderate posterior dependent congestion but were otherwise normal. The mediastinum contained several moderately enlarged nodes. The pericardiac cavity contained about 100 cc. of dark amber fluid. The heart was normal throughout. The blood was very thin and pale, showing no postmortem clotting.

Fig. 1.—P. S., aged 13 years, seventeen months after onset.

Fig. 2.—G. S., aged 11 years, seventeen months after onset.

Microscopically, the lymph nodes showed fairly cellular Hodgkin's disease with a moderate number of eosinophils, Dorothy Reed cells, and many areas of necrosis. The spleen involvement was typical of Hodgkin's disease. The liver showed nodules of Hodgkin's disease with surrounding pressure atrophy.

The other organs showed no pathologic changes of importance.

An autopsy was performed on G. S., January 21. The conditions found were almost identical with those recorded for the older brother, with the following exceptions: The external lymph nodes were largest on the right rather than on the left side. There was no involvement of the liver and no large mass of nodes obstructing the common duct as in the former, though the abdominal nodes were all markedly enlarged. The nodes were all somewhat firmer than those of the older boy.

Microscopic examination revealed extreme fibrosis of all the lymph nodes but especially so of the cervicals. The spleen involvement, though grossly similar, also showed more fibrous tissue than was shown in the other autopsy.

It will be remembered from the history that the younger boy had received more roentgen treatment than the older, and this may be a causative factor in the increased fibrosis revealed in the microscopic picture.

CONCLUSIONS

1. Two cases of Hodgkin's disease in brothers, aged 11 and 13 years, respectively, occurred simultaneously.

2. The onset was a week apart and death occurred about two years later, two months apart.

3. These cases demonstrate the value of an early biopsy, since tuberculosis was naturally the clinical diagnosis.

4. There is no evidence of Hodgkin's disease in any of the family history.

5. Our conception of Hodgkin's disease is that of a neoplasm rather than that of an infectious granuloma. The simultaneous occurrence of this condition in two brothers does not shake our belief, because these two cases make a total of only twelve cases in five families which we could find reported.

Murray Hospital Clinic.

DINITROPHENOL

ITS THERAPEUTIC AND TOXIC ACTIONS IN CERTAIN TYPES OF PSYCHOBIOLOGIC UNDERACTIVITY

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AND
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In a recent report, Cutting, Mehrtens and Tainter [1] summarized their experimental and clinical studies of the pharmacologic properties of alpha-dinitrophenol (1-2-4) ($C_6H_3(NO_2)_2OH$) and concluded that

> The outstanding actions [of the drug] are sustained increases in metabolism and body temperature, enormous activity of all metabolic functions, and fatal pyrexia with excessive doses. Doses within therapeutic range cause in man significant increases in metabolism without fever, which may be useful in treatment of obesity, hypothyroidism and similar depressed metabolic states.

In a later communication, Tainter, Stockton and Cutting,[2] reporting on their clinical experience with the use of the drug in the treatment of obesity, stated:

> The predominant action of dinitrophenol is to stimulate metabolism and heat production. . . . An average loss of weight of between 2 and 3 pounds weekly was produced by an average daily dose of 0.3 Gm. (5 grains) of the sodium dinitrophenol, in capsules taken with meals. The drug has been administered to individual patients by us continuously for as long as four months without demonstrable evidences of cumulative or toxic effects. . . . A suitable regimen of dinitrophenol medication for adults would appear to be an initial daily dose of 100 mg. of the sodium salt orally, taken with meals, with an increase at weekly intervals until a dose is established that causes a loss of body weight of between 2 and 3 pounds weekly or too marked or unpleasant symptoms of warmth and sweating.

With the pharmacologic action and safe dosage of dinitrophenol thus tentatively established, it appeared of importance to determine whether the drug would be efficacious in increasing the subnormal metabolic rates often found in dull, depressed, listless, apathetic psychiatric patients [3] and thus prove of benefit, in a psychobiologic sense, in the empirical treatment of these patients. It is our purpose in this report to outline our experiences with the use of sodium dinitrophenol in eighteen such cases over a period of four months.

MATERIAL AND METHOD

Patients were selected who were between 18 and 40 years of age and free of gross organic disease. The finer nosologic differentiations were disregarded, the psychiatric criterion for inclusion in the group being a change within the previous year from an outwardly satisfactory and adaptable mental state to one characterized by listlessness, indifference, mild depression and otiose lethargy. Oxygen consumption tests were run on each patient before treatment was begun and repeated until a reading—generally the lowest—was obtained that seemed most closely to approximate the true basal metabolic rate in each case. The patient was then given 60 mg. (1 grain) of sodium dinitrophenol per day, and the dose usually increased 60 mg. every third day until a maximum of 5 mg. per kilogram in divided doses with meals twice a day was reached or until adverse symptomatology appeared to contraindicate further treatment. Routine blood counts and urine examinations were done twice a week and the oxygen consumption rates rechecked at approximately weekly intervals. In addition, the nonprotein nitrogen of the blood, and the icteric index and Van den Bergh reactions were determined when indicated. Each patient's temperature, pulse rate and respiratory rate were observed at eight half-hourly intervals after each dose during the first week and three times a day thereafter, and records of the weight, symptomatology, spontaneous activity and mental state were made twice a week throughout the treatment. Medication in each case was continued for three months, after which the physical, mental and laboratory examinations were repeated and any definite changes in the case summarized.

PSYCHOBIOLOGIC EFFECTS OF DINITROPHENOL MEDICATION

Physiologic.—With the exception of five cases, all patients were kept on a regular dosage throughout the three months study save for monthly rest intervals of one week inserted as control periods. The effects of sodium dinitrophenol on the thirteen patients given this full treatment may be summarized as follows: No gastro-intestinal or genito-urinary disturbances fairly attributable to the drug were observed in any instance. The pulse rate under full dosage rose from four to twenty-two beats per minute, but analysis of successive blood pressure readings in the thirteen cases showed no significant deviations from the individual norm. No persistent changes in blood cytology or urinary constituents were noted. In five cases a yellowish discoloration of the sclerae and skin was observed under full dosage, but the icteric index in each instance (when done so as to eliminate the seroxanthochromic effect of the drug itself [4]) was normal.

Metabolic Rate: The oxygen consumption rate of our patients rose from a pretreatment control mean of -6.9 ± 1.54 [4] to 26.0 ± 2.95 under maximal dosage, the mean rise in metabolic rate being therefore 32.9 ± 3.31 and ranging from $+8$ to $+52$ in individual patients. Within a week after cessation of treatment, the mean metabolic rate in the thirteen cases had fallen to -1.8 ± 2.28, a rate not significantly different from the control pretreatment mean, although two cases showed some persistent elevation of metabolic rate for fifteen days following treatment.

Weight: The weight loss during medication varied considerably: Patients whose metabolic rate was elevated less than 15 per cent (three patients) either suffered little or no loss of weight or actually gained slightly as the result of an apparently increased appetite; other patients, excluding the patient who died, lost from one-half to approximately 2 pounds (from 227 to 917 Gm.) a week. The grand mean rate of loss in our series was $^{94}/_{100}$ pound (426 Gm.) a week.

Psychologic.—The effects of the dinitrophenol medication on the mental status of our patients varied widely. A study of the behavior charts and the successive mental examinations made on each patient revealed that in eight instances no psychologic change

From the Psychopathic Hospital, Baltimore City Hospitals.

1. Cutting, W. C.; Mehrtens, H. G., and Tainter, M. L.: Action and Uses of Dinitrophenol, J. A. M. A. **101**: 193 (July 15) 1933.

2. Tainter, M. L.; Stockton, A. B., and Cutting, W. C.: Use of Dinitrophenol in Obesity and Related Conditions, J. A. M. A. **101**: 1472 (Nov. 4) 1933.

3. (*a*) Hoskins, R. G., and Sleeper, F. H.: Basal Metabolism in Schizophrenia, Arch. Neurol. & Psychiat. **21**: 887 (April) 1929. (*b*) Hoskins, R. G.: Oxygen Consumption (Basal Metabolic Rate) in Schizophrenia, ibid. **28**: 1347 (Dec.) 1932. (*c*) Hoskins, R. G., and Sleeper, F. H.: Organic Functions in Schizophrenia, ibid. **30**: 123 (July) 1933. A summary of the previous literature is included in these reports.

4. Mean $\pm$ its probable error.

could definitely be attributed to the pharmacologic action of the drug, whereas in four cases the periods of medication were characterized by a decrease in spontaneous interest and activity and a deepening of the mental and physical indolence into lethargy and torpor. Conversely, maximal administration of the drug in six other patients was accompanied by a lightening of the mood, progressive clearing of the sensorium and definite increase in spontaneous awareness and activity, the evidences of improvement being checked by more or less well marked retrogressions during the first and second seven-day rest periods. Of the six patients, three manifested a tendency to remission toward their former mental state when the drug was finally discontinued, whereas the remaining three have maintained their initial improvement to date.

Toxic.—Our series includes one death.[5]

A. M., a Negress, aged 31, weighing 130 Kg. (288 pounds), on physical examination was normal except for an enormous panniculus adiposus. The blood pressure was 162 systolic, 108 diastolic. Routine blood, urine and spinal fluid examinations were negative; Wassermann tests of the blood and spinal fluid were negative. The patient was physically lazy, slothful and inert, mentally retarded, sluggish and apathetic. The intelligence quotient was 58. The basal metabolic rate, Sept. 16, 1933, was —14; September 17 it was —19. Dinitrophenol medication, 0.12 Gm., with the noon meal, was begun September 19 and increased 0.06 Gm. every day until, by September 24, the patient received 0.42 Gm. in divided doses daily. The temperature, pulse and respiratory rate, taken every half hour for four hours after each dose, showed no significant deviations from normal. September 26, the weight was 284 pounds (128 Kg.); the basal metabolic rate, +15. The patient had an increased appetite and was slightly more active; no other effects were apparent. The dosage increased to 0.3 Gm. twice a day. October 1 the weight was 281 pounds (127 Kg.); the basal metabolic rate was 19. The pulse ranged between 82 and 98. The rectal temperature readings every two hours were normal. There were no further changes in the behavior. October 2, the patient complained occasionally of difficulty in breathing and appeared confused and torpid. The pulse ranged from 96 to 110; the blood pressure was 142 systolic, 88 diastolic; physical examination otherwise was negative.

Dinitrophenol was discontinued. October 3, the patient was stuporous and dyspneic; respirations ranged from 24 to 28; the pulse from 92 to 120; the blood pressure was 144 systolic, 68 diastolic. The cytology of the blood was normal; the nonprotein nitrogen of the blood was 35 mg. per hundred cubic centimeters. The icteric index was 5.5, and the carbon dioxide combining power of the blood was 30. The urine was clear. On two occasions 1,000 cc. of 10 per cent dextrose with 40 units of insulin was administered by vein without apparent improvement. Epinephrine, caffeine and atropine were given as seemed indicated. The highest rectal temperature was 100.4 F. at noon; pulse, 120. October 4 the patient was comatose, incontinent and cyanotic. Coarse râles were heard in the lung bases. The pulse ranged from 118 to 148; the respiratory rate, from 28 to 48. The highest rectal temperature was 102, just before death, at which time the blood pressure had fallen to 36?/0. The patient grew progressively weaker despite all supportive measures and died at 10 p. m.

At autopsy the only gross abnormal observations were obesity, fibrous pelvic adhesions, slight scarring of the tricuspid and mitral valves, hypertrophy of the right ventricle and small scattered fatty deposits in the aorta. There were no evidences of other gross lesions in any organ or of terminal pulmonary infection or cardiac failure. Unfortunately, because of the patient's indigence, the autopsy was necessarily delayed four days, so that exact interpretations of the microscopic sections of the viscera were rendered impossible by tissue autolysis. Sections of the central nervous system showed no definite pathologic changes.

5. One other death has been reported by J. C. Geiger (J. A. M. A. **101**: 1333 [Oct. 21] 1933).

Since this case—one of the earliest in our series—presented evidence that dinitrophenol may possess a cumulative toxic activity which is not heralded by excessive sweating, dermatitis or pyrexia[1] but which seems, on the other hand, to be characterized by a fall in the blood pressure, tachycardia, the onset of acidosis and progressive torpor, we naturally stopped administration of the drug to all subsequent patients who, under any dosage, showed an accentuation of their lassitude, a persistent fall in blood pressure, or a pulse rate of over 100 for longer than six hours. Four additional cases showed these symptoms within from six days to three weeks after the beginning of treatment; further therapy was therefore discontinued in these cases. Possibly because the patients with an idiosyncrasy to the drug were thus eliminated, we observed no other unfavorable "side actions"[1] of the drug in the remainder of our series.

COMMENT

While it cannot at present be established that the rate of somatic metabolic activity, even of the central nervous system, furnishes a paradigm for the quantity or quality of psychodynamic energy, it is nevertheless interesting to note that Hoskins,[3b] in a careful experimental and statistical study, showed that the mean oxygen consumption rate in 214 cases of dementia praecox was 88.3 per cent of normal (11.8 per cent coefficient of variation), the rate being most depressed (87.9 per cent) in the sluggish, inactive catatonic group. It is also relevant to note that all our cases were readily classifiable as schizophrenic, hebephrenic or catatonic in type, the alternative possibility of a hypothymic disturbance being prominent in only five instances. Our data concerning an initially depressed metabolic rate in this type of patient therefore confirm those of Hoskins and, allowing for the small number in our series, do not differ statistically from his.

Our experiences with the pharmacologic properties of sodium dinitrophenol coincide in general with those of its proponents.[2] The drug undoubtedly stimulates general body metabolism and, by inference, that of the central nervous system. In our series, however, its toxicity in the recommended dosage seemed to be considerably greater than heretofore reported, the primary warning signs of its noxious action being a fall in blood pressure, the onset of acidosis and progressive tachycardia and torpor.

An evaluation of the data at hand with regard to the psychotherapeutic activity of dinitrophenol is difficult, since the element of spontaneous variation cannot be absolutely excluded from so small a series. However, it was felt that lengthy citation of the case records in the present study would be of no additional advantage in forming a fair evaluation of the results obtained, since our judgment as to whether the psychiatric changes observed in an individual patient could or could not be attributed to the medication was predicated not only on a study of his behavior charts and formal mental status records but also on previous experience with each patient and close contact with him during the period of his treatment. One general observation, nevertheless, deserves mention: The six patients in our series who derived benefit from the medication were below the age of 30, and four of them had been suffering from the first occurrence of a retarded-apathetic state. The problems raised by these observations are at present being studied in a larger series of cases.

SUMMARY AND CONCLUSIONS

The pharmacologic and psychotherapeutic effects of sodium dinitrophenol were studied in eighteen patients whose psychobiologic status was characterized by sluggishness, passivity and apathy. In therapeutic dosage the drug caused a mean rise of 32.9 ± 3.31 per cent in the rate of oxygen consumption and a mean weight loss of $^{92}/_{100}$ pound (417 Gm.) per week. Toxic effects occurred in five cases and were characterized by a fall in blood pressure, tachycardia, acidosis, progressive stupor, and one death. Indeterminate or adverse psychotherapeutic effects were observed in eight and four cases, respectively, while six patients showed a definite improvement in their mental state, apparently attributable to the medication. Dinitrophenol is therefore unpredictably toxic to some patients, but its careful administration may be of empirical benefit in certain types of recent and insecurely established psychobiologic underactivity.

NORMAL SLEEP PATTERN FOR CHILDREN

FACTORS WHICH DERANGE SUCH A PATTERN (PHYSICAL FACTORS)

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Sleep may be defined as a normal temporary loss of consciousness occurring periodically. During sleep the receptivity of the person to sensory stimulation is greatly diminished, but motor activity continues in an apparently automatic manner. There are several approaches to the study of sleep. Of these, the most commonly used in the past have been, first, investigation along the line of sensory response, as an example of which there are the experiments of Kohlschutter [1] and Michelson; [2] second, from the standpoint of chemistry, principally the work of Piéron,[3] and third, the study of motor activity during sleep, based on the reported work of Karger,[4] Renshaw,[5] Guttmann,[6] Mullin[7] and Cooperman.[8] In the present study I have used the latter method of study, namely, that of motor activity during sleep. I have adopted this method because I agree with Sherman,[9] Renshaw [5] and others that an observer cannot tell with any sufficient degree of accuracy whether a person is awake or asleep at any given instance. I know of no method so far evolved of determining the exact moment at which a person is definitely asleep or at which moment he first awakens. I believe with Johnson and Weigand [10] that an accurate record of all movements made by a person after retiring is the most accurate index as to the character of that particular person's sleep. I further believe that no healthy person can return to the awakening state from sleep or be awake and remain in dorsal decubitus for more than a very short time without rearranging his position. I assume, therefore, that the depth of sleep is inversely proportional to the amount of sleep movement, and I concur with Kohlschutter's [1] observations that the soundest sleep is reached within the first and second hour after retiring. For these reasons, such descriptive terms as "asleep" and "awake" are unsatisfactory, certainly from a standpoint of scientific investigation.

This paper is presented as a study of the sleep of twenty-eight children, aged from 9 to 14 years, equally divided as to sex, over a period of 364 nights. I have records of 8,736 child nights, or 78,624 hours, or 4,717,440 minutes, of sleep. My observations were begun in February, 1932, and may be completed during the present summer. This paper is presented as a preliminary report. In a study of sleep recorded by an instrument of precision, one is at once impressed by the number of variable factors that may disturb sleep. When one studies the various influences, such as noise and quiet, light and darkness and heat and cold, one has mentioned only a few of the factors that enter into the production of, or into the interference with, sleep, many of which are, of course, beyond one's control. In these studies an effort has been made to control these extraneous factors as thoroughly as possible. The sleep laboratory is located miles from a railroad or public thoroughfare, so that noises are reduced to a minimum. All of the children studied had identical beds, springs, mattresses, pillows and bed clothing. Barometric readings were made twice a day at the same hours; changes in temperature were noted by a continuously recording thermometer.

What happens when an individual, or a child, goes to sleep? Does he go into a state of suspended animation and remain entirely motionless, or do the voluntary muscles contract in sleep just as the involuntary muscles continue their activity? If a child moves in his sleep, does the movement vary from hour to hour and from night to night? Cannot these movements be observed and recorded in a definite sleep pattern for a child? Would this sleep pattern differ in children of the same and opposite sex? Does sound sleep mean quiet sleep? Does a child feel as refreshed after a night in which the sleep movements have been frequent, as when the sleep movements have been infrequent? What are the effects of the emotions on sleep? What is the effect of the various hypnotics on sleep? Are sleep movements affected in disease? What are the effects of the various physical agents on sleep? All of these questions, and many more, seem fit subjects for controlled investigation.

For the first three months of the investigation on sleep the data were obtained by direct visual inspection of the sleepers. Two night nurses were assigned to this duty; they noted any change of position of the children under observation. It seemed best to limit observations to change of position, as many minor movements eluded detection. A form using symbols for the various positions of the body was arranged for this, so that the nurse could rapidly fill in the night's observations and transcribe them the following morning. With this method it early became apparent that only a small part of the picture was being obtained. Therefore, I began to use the electrically recording hypnograph.

Read before the Section on Pediatrics at the Eighty-Fourth Annual Session of the American Medical Association, Milwaukee, June 14, 1933.

Because of lack of space, the article is abbreviated in THE JOURNAL by the omission of some of the illustrations. The complete article appears in the Transactions of the Section and in the author's reprints.

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2. Michelson, E.: Untersuchungen uber die Tiefe des Schlafes, Psychol. Arb. **2**: 84-117, 1897.
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5. Renshaw, S.: Personal communication to the author.
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METHOD AND APPARATUS FOR RECORDING SLEEP MOVEMENTS

The machine used for recording sleep was originally described by Renshaw [8] and Weiss in the *Journal of Psychology* in 1926. In brief, the principle involved is as follows: The bed mechanism attached to the bedspring consists of a perpendicular piece of metal containing alternate inserts of bakelite and brass. A small brass wheel travels up and down this piece, which makes or breaks an electric contact with the slightest movement of the person occupying the bed. This contact is conducted through cables into an adjoining room in which is placed the hypnograph itself. The hypnograph consists of a battery of twenty-four stylus pens (one for each bed) which write on a uniformly traveling roll of paper, 8 inches (20.32 cm.) broad. Two colors of ink are used in the pens, one for the male and another for the female subjects. As this paper passes under the pens, it is stamped electrically by a timer at one minute intervals, so that at the end of a night's observations this can be ruled out sixty minutes to the hour and each body movement accurately recorded, minute by minute, for the entire nine hours or 540 minutes that the subject is in bed. As the contacts are made or broken by the bed mechanism, electromagnets on each pen of the hypnograph make offsets from the base line on the record. Beside the hypnograph are relay boxes so arranged that if the circuit through any bed ceases functioning properly, the signal lamp will light and remain burning until the condition is corrected. Thus should a subject leave his bed for any purpose during the night, the relay lamp will at once notify the operator of this fact.

At the beginning of the work each child who was to be studied was given a physical examination and such laboratory tests as urinalysis, complete blood count, blood pressure, electrocardiographic tracing, basal metabolic rate, examination of the stool and the like. At this initial examination all foci of infection that were found were removed. Likewise, the children with organic defects were excluded from this group.

At the end of each night's observations the active minutes, that is, any minute during which a sleeper makes any movement, are counted, hour by hour, and recorded for each of the twenty-four children, the total number of active minutes being entered at the end of the night. From this record the observations are copied daily onto the subject's chart.

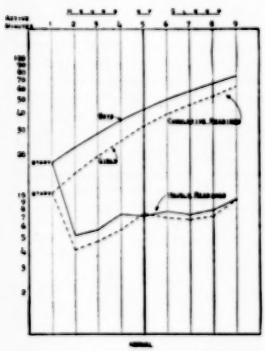

Fig. 13.—Curves of sleep of twelve male subjects compared with twelve female subjects.

SLEEP MOVEMENTS IN HEALTH

I shall consider first what constitutes the normal sleep pattern.

For the purpose of comparison a single subject was taken at random, on whom a record of sleep motility made by observation was compared with a record of sleep motility over a period of fifteen consecutive nights as registered by the hypnograph.

It is quite apparent that while certain evidence is gotten by observation alone, it is by no means as accurate or complete as when the movements are recorded electrically. For example, to date I have graphic records of about 78,624 hours of sleep, and the highest period I have found of any person sleeping without any body movement is 107 minutes (one hour and forty-seven minutes).

These observations of sleep movements in health are based on a study of 3,240 hours of normal sleep. Except in a very general way no two persons have the same sleep pattern. It is known that the first hour of sleep is the most active hour, and the next most active is the last regular hour of sleep. I can go further than this and say that the most active part of the night is the first thirty minutes after retiring, and the most quiet part is the second thirty to forty-five minutes. For example, if a person is in the habit of retiring at 10 p. m. and of getting up at 7 a. m., he will show more activity—more sleep movements—between 10 and 11 p. m. and 6 and 7 a. m. than any other two hours of the night. Aside from this, generalities cease, and what is quite normal for one person may be distinctly abnormal for a second person, on the assumption that both are in normal physical condition. This variability of sleep patterns is equally true for males and females.

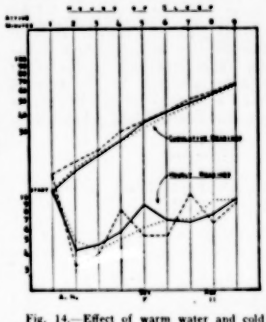

Fig. 14.—Effect of warm water and cold water on the sleep pattern. The continuous curve is for normal sleep, the broken curve, for sleep after the drinking of warm water; the dotted curve, for sleep after the drinking of cold water.

The graphs are all plotted on ratio paper. The hours of sleep are listed at the top of the graph with a scale showing the active number of minutes to the left of the graph. The lower limb of the graph shows the body movements, hour by hour, of the person under observation; the upper limb of the graph is a summation of the minute movements throughout the night.

Among the twenty-four children studied, the greatest variation in the normal sleep pattern was found in the male subjects. The most active boy studied showed an average of 110 active minutes of sleep during the night, while the most quiet one showed an average of only 53 active minutes, both over a period of fifteen consecutive normal nights. Figure 13 shows fifteen consecutive normal nights of sleep in male subjects as compared with those in twelve female subjects. It is seen that females are sounder sleepers than males; they not only get to sleep mored quickly but sleep more quietly throughout the night. This substantiates observations by Ladame.[11] His conclusions, however, are based on direct observations, without recording apparatus, and therefore are probably not so reliable.

If the entire group of twenty-four children is arbitrarily divided into three groups, based on their activity during sleep, the following facts seem to be true: Suppose the group averaging from fifty to sixty active minutes per night are called "quiet sleepers," the group between sixty-one and eighty-four active minutes per night "average sleepers" and the group between eighty-five and a hundred active minutes per night "restless sleepers." With this division, five children, or 20.8 per cent, will fall in the quiet group; sixteen, or 66.6 per cent, in the average group, and three, or 12.5 per cent, in the restless group. It is interesting to know that the

11. Ladame, C.: Du sommeil et de quelques unes de ses modalites chez les alienés, Schweiz. Arch. f. Neurol. u. Psychiat. **13:** 371, 1923.

children who were "restless sleepers" will move approximately two and a half times more in the first hour than the children who were "quiet sleepers." Furthermore, it is believed that after getting even a few nights of normal hypnograph records, a child can be definitely rated as to type of sleep. From observations with normal children, sleeping under controlled conditions, it can be stated that a child who is a "quiet sleeper" remains a "quiet sleeper," and that a child who is a "restless sleeper" will remain restless from week to week, month to month and season to season.

I shall present in this report principally the effect on sleep of various physical factors, namely, beverages, food, baths and weather temperature.

THE EFFECT OF CERTAIN BEVERAGES ON SLEEP

It has long been accepted that the drinking of certain beverages on retiring induces sleep. The taking of warm milk on retiring, more especially by neurasthenic persons, is a time-honored form of therapy. I thought that it might be interesting, therefore, to test the ingestion of warm milk and other beverages on retiring and determine by hypnographic observations just what effect this would have on sleep. This experiment was done on twelve normal children selected because it is believed that in children any psychic factor can be disregarded. Should any changes be noted in the children's sleep, would similar changes have been observed had the child taken cold water, warm water or any one of a number of other beverages? Therefore, in the first experiment, to the series of children mentioned 6 ounces (178 cc.) of cold water was given on retiring, and the children were in bed and the lights were out at 8:30 p. m. This was repeated on five consecutive nights. Following this, warm water in a like amount, given at the same time, was repeated for five consecutive nights. From a study of these series it can be seen that the sleep movement was increased in some children, diminished in others and unchanged in the remainder. A typical example is seen in figure 14.

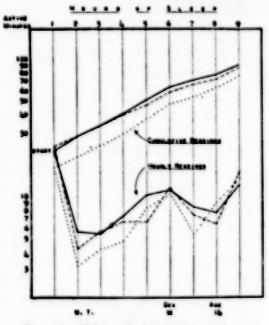

Fig. 15.—Effect of the drinking of warm water and warm milk on the sleep pattern. The continuous curve is for normal sleep; the broken curve, for sleep after the drinking of warm water; the dotted curve, for sleep after the drinking of warm milk.

In making an estimate of the significance of the results obtained, it seemed wise to adopt the biometric method which is widely used, namely, that of calculating the probable error. In explanation of the meaning of the probable error, it can be stated that it has been practically a universal custom among biometric workers that the difference (or constant) which is smaller than twice its probable error is probably not significant, whereas the difference (or constant) which is three or more times its probable error is either "certainly" or at least "almost certainly" significant.[12] In the case of the experiments with warm water the difference in the number of movements before and after the experiments was less than three times the probable error in 8.3 per cent of the children, was greater in the same percentage of children, and was less than twice the probable error in 83.3 per cent of the children. On nights on which cold water was received, there was decreased activity in 16.7 per cent of the children and an increase in 25 per cent, and in 58.3 per cent of the children there was no effect noted whatsoever. A similar experiment was done with 6 ounces of warm milk given on retiring to twelve normal children on five consecutive nights. From a study of the results obtained it can be seen that the sleep movement was increased in some children, diminished in others and unchanged in the remainder. Comparison of the action of warm water and warm milk is shown in figure 15. From the standpoint of the probable error it was seen that in 41.7 per cent of the children the activity was diminished; movement was increased in 8.3 per cent, and in 50 per cent there was no change noted whatsoever. A further experiment was done in which twelve normal children received 6 ounces of a cold caffeine-containing beverage on consecutive nights, the beverage containing approximately ¾₅ grain (0.03887 Gm.) of caffeine and 20 Gm. of sucrose to 6 ounces. Deductions made after estimating the probable error in this series showed that there was less activity in none of the children, in 18.2 per cent of the children there was an increased activity, and in 81.8 per cent there was no effect noted. A concluding experiment using 6 ounces of orangeade containing 20 Gm. of sucrose was given to twelve normal children on consecutive nights. Deductions after determining the probable error in this series showed that there was less activity in none of the children and an increased activity in 18.2 per cent, and in 81.8 per cent there was no effect noted whatsoever. Figure 16 shows the comparative sleep patterns after receiving orangeade and cold caffeine-containing beverages as compared with the normal.

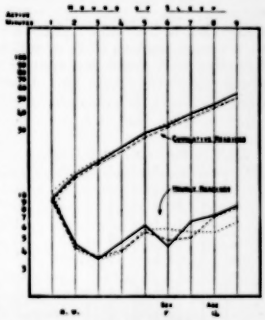

Fig. 16.—Effect of the drinking of orangeade and a cold caffeine-containing beverage on the sleep pattern. The continuous curve is for normal sleep; the broken curve, for sleep after the drinking of orangeade; the dotted curve, for sleep after a cold drink.

It is rather difficult to interpret these results. It seems fair to conclude that warm milk has a definite ability in lessening the number of sleep movements in normal children. Why there is increased sleep movement in the series receiving cold water greater than in the series receiving orangeade and cold caffeine-containing beverage is not understood. It would seem fair to conclude that if the restlessness was due to an increase of urination as a result of the intake of fluid on retiring, it should be the same in both instances, as the amount of fluid was identical in each of the five series. These observations are based on a series of sixty child nights, and it is possible that obtaining a

12. Pearl, Raymond: Introduction to Medical Biometry and Statistics, Philadelphia, W. B. Saunders Company, 1923.

larger number of observations might change these figures to some degree.

THE EFFECT OF A HEAVY MEAL ON A CHILD'S SLEEP

This experiment was done on a series of twenty-four children in order to determine what might be the effect on sleep of the taking of a heavy evening meal. Dinner was served at 6:30 p. m., and the children retired at the usual hour of 8:30 p. m. The meal was made up of comparatively plain food of considerable variety, and the children were allowed to eat as much as they wished, which in all instances was a considerable amount. The meals were not given on consecutive nights, but at intervals, and consisted of a fruit course, then a meat, such as steak or turkey, several vegetables, including both green and starchy, and dessert, such as apple pie or ice cream, and 1 ounce (28.35 Gm.) of candy. From a study of these experiments sleep motility was found to be definitely increased in twenty-three of the twenty-four children. A typical example is shown in figure 17. From the absolute values as shown on the graphs it was seen that in only one child was the sleep pattern unchanged. And while it cannot be said that all cases showed an increase in sleep movements greater than the probable error, yet a very high percentage of the children showed a much greater increase in movement than was seen after any of the experiments with a beverage. This increase in restlessness was especially noticeable in the first hour after retiring, for in only one instance did sleep motility in the first hour approach normal. Activity was much less marked in the second hour than in the first, but in eleven of the twenty-four children motility was still above normal. In many curves the increased activity continued throughout the night. It is concluded from these records that the ingestion of a very large evening meal may be a disturbing factor in normal children's sleep.

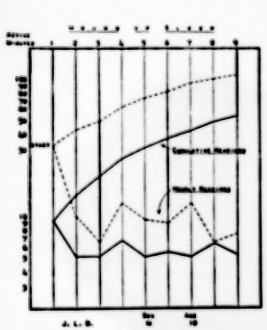

Fig. 17.—Effect of a heavy meal on the sleep pattern. The continuous curve is for normal sleep; the broken curve, for sleep after a heavy meal.

THE EFFECT OF BATHS ON CHILD SLEEP

Another procedure often used to induce sleep is the administration of warm baths on retiring, and an experiment was done to determine to what extent sleep motility might be influenced by giving not only warm baths (temperature of the water, 102 F.), but also cold baths (temperature of the water, 60 F.) to the same subject on different nights. Twenty-four children were used in the observations. The child remained in each type of bath the same length of time, and the baths were completed five minutes before being put to bed; the lights were extinguished at the usual hour, 8:30 p. m. From the data obtained it can be seen that in some children activity was greater than normal after either type of bath. In some children warm baths seemed to have a quieting effect on sleep, while in others cold baths resulted in an equal lessening of activity. The giving of baths to some children seemed to have no effect whatsoever either in increasing or in decreasing sleep movements. A typical example is seen in figure 18. Using the absolute values as established, it can be concluded that baths, irrespective of the temperature, have no constant effect either in the production of, or in the interference with, sleep in normal children.

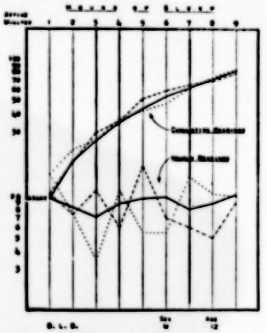

Fig. 18.—Effect of a warm bath and a cold bath on the sleep pattern. The continuous curve is for normal sleep; the broken curve, for sleep affected by a warm bath; the dotted curve, for sleep affected by a cold bath.

THE EFFECT OF WEATHER TEMPERATURE ON A CHILD'S SLEEP

An interesting series of experiments was done in order to determine the possible effect of the temperature of the weather on children's sleep. The normal sleep curve that heretofore has been quoted in the experiments mentioned was made during a period of cool or cold weather. This normal might be referred to as winter normal, since the minimum temperature during the period observed was 28 F., and the maximum temperature was 44 F. A warm weather normal was determined, using twenty-four children over a like number of nights as the winter normal. During this period the temperature fluctuated from a minimum of 60 F. to a maximum of 84 F. The average temperature during the period, both day and night, was well above 70 F. Of the twenty-four children observed, only one child slept quieter during the hot weather. Fourteen had increased restlessness, and in nine children there was no effect. Considering these figures from a standpoint of probable error, it was found that 4.2 per cent of the children were less active, 58.3 per cent were more active, and in 37.5 per cent there was no appreciable effect on sleep. A typical example is seen in figure 19.

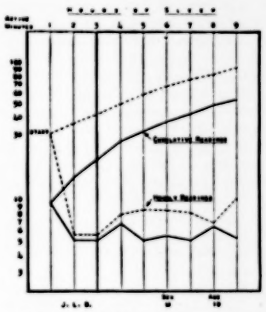

Fig. 19.—Comparison between cold and warm weather normals. The continuous curve is for cold weather; the broken curve, for warm weather.

Attention is drawn to the fact that a normal child has a definite sleep pattern. His activity, once established, will practically always follow the same pattern. It is only when his sleep is disturbed by disease or when he is put under such experimental conditions as to affect his sleep that this pattern changes. Even under experimental conditions, the sleep pattern follows the same general outline, increasing or decreasing in activity as the case may be.

CONCLUSIONS

It is believed that the following conclusions may be drawn from these facts:

1. A child has a definite sleep pattern. This pattern is rarely disturbed except through sickness or certain experimental conditions.

2. The drinking of 6 ounces of warm milk at bedtime seems to produce quiet sleep in normal children. Of the other beverages tested, none seems to affect sleep consistently, one way or the other. The drinking of a beverage containing ¾ grain of caffeine produces no more restlessness than was seen after the drinking of an equal amount of orange juice.

3. The taking of a large amount of food at the evening meal, even though the food might be considered plain food, resulted in marked restlessness. In many cases the restlessness continued throughout the night.

4. The giving of baths, either warm or cold, on retiring seems to have no constant effect, either in the production of, or in the interference with, sleep in normal children.

5. A child sleeps definitely quieter in cold weather than in hot.

478 Peachtree Street, N.E.

ABSTRACT OF DISCUSSION

DR. M. HINES ROBERTS, Atlanta, Ga.: Why we fall asleep remains an unanswered riddle. The study of sleep, except in its grosser aspects, is so elusive we must be content with the investigation of certain of its physical manifestations and physiologic accompaniments in the hope of ultimately arriving at its essential features. The very multitude of theories which have been advanced speaks for their inadequacy. Most of these are now of historical interest; a few seem sufficiently comprehensive to encompass the known facts of our behavior and physiology during sleep. The essayist has brought to us the study of the measurement of muscular activity during sleep which may be accepted as a measurement of the depth of sleep. His work has been done with great care and precision. His studies of the normal sleep pattern seem sufficiently extensive to establish definitely certain general principles. Although motor activity during sleep cannot possibly give the whole picture of this intricate problem, it is probably the most accurate method available at present for the investigation of the depth of sleep and the effect of physical agents on the sleep pattern. If his conclusions are correct, that the so-called sleep pattern of the individual child is constant and unchangeable except when influenced by physical agents, the thought presents itself that probably such patterns are determined by the nervous make-up of the child—his spasmogenic aptitude. Many questions present themselves. What, for example, is the behavior of the various groups of children during their waking hours? Are the restless sleepers nervous, high-strung children by day? What relation, if any, exists between the child's sleep pattern and his body build? Does the thin, wiry child fall in the restless group, while the average or overweight child belongs to the quite group? What influence does heredity play? Does the high-strung, nervous parent beget a restless sleeper? The essayist has given us much interesting data, some of it rather upsetting our preconceived notions concerning the effect of certain physical agents on sleep.

DR. C. ULYSSES MOORE, Portland, Ore.: I should like to know whether a careful study has been made of the effects of ovaltine on children. Cases of what we call "ovaltine nervousness" are reasonably frequent in our practice. This may, of course, be an allergic reaction to one of the elements in ovaltine. We occasionally find children who are allergic to chocolate in any form. Ovaltine for some reason appears to be a most common offender. Have others had a similar experience?

DR. CHARLES GLENVILLE GIDDINGS, Atlanta, Ga.: I cannot answer Dr. Moore's question. I have never studied the matter and do not have any information about it.

HYPOCALCEMIA

ITS RELATIONSHIP TO MIGRAINE

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EUREKA, CALIF.

Cases of idiopathic migraine are becoming fewer and fewer as various etiologic factors are being determined. The relation to allergy in a number of these unfortunate persons is well known and has been recently emphasized by Rowe.[1] The infectious factor, particularly as related to foci around the distribution of the fifth cranial nerve, also is well recognized. However, there exists an apparently unclassified group, and it is with this group that the present paper is concerned.

Observations over the past two and one-half years on patients with this complex, usually classified as migraine with respect to blood calcium determinations, have led to some interesting conclusions. It was first noted that a few of these patients exhibited degrees of tetany varying from very mild, almost imperceptible clinically, to very severe. Hyperpnea in a few very mild cases induced tingling of the extremities and occasionally a positive facial phenomenon. These conditions were quite constantly associated with low determinations of calcium in the blood. It is not assumed, however, that all cases of migraine exhibit these phenomena. As a matter of fact, cases of frank operative tetany that have been observed do not exhibit the characteristic migraine symptomatology.

Numerous cases are apparently associated with disease of the biliary tract. However, the failures of surgery on this system to relieve the unilateral headache are only too well known. The question is raised whether or not the biliary disturbance depresses the calcium regulating mechanism or, on the other hand, that the calcium disturbance per se favors pathologic changes in the biliary system. No attempt has been made in the present study to clarify this point.

For this complex I propose the term "migraine-tetanic syndrome" conforming to the idea that a degree of hypoparathyroidism exists and that the latter condition exists more frequently than is generally accepted.

The methods employed to estimate calcium in the blood were first the method of Tisdall [2] and more recently that of Roe and Kahn,[3] because of its simplicity.

Normals for each were established ranging from 10.5 to 11.5 mg. for 100 cc. of blood. This is practically confirmed by the recent work of Inskeep,[4] who employed calcium lactate in raising the calcium level.

Spinal fluid calcium representing the diffused fraction in the body has been estimated in a number of the

1. Rowe, A. H.: Allergic Migraine, J. A. M. A. **99**: 912 (Sept. 10) 1932.

2. (a) Kramer, Benjamin, and Tisdall, F. F.: Simple Technic for the Determination of Calcium and Magnesium in Small Amounts of Serum, J. Biol. Chem. **48**: 223-227 (Sept.) 1921. (b) Tisdall, F. F.: A Note on the Kramer-Tisdall Method for the Determination of Calcium in Small Amounts of Serum, J. Biol. Chem. **54**: 439-441 (June) 1923.

3. Roe, J. H., and Kahn, B. S.: J. Biol. Chem. **67**: 585 (March) 1926.

4. Inskeep, L. D.: Etiology and Treatment of Migraine, Northwest Med. **32**: 67-68 (Feb.) 1933.

patients under observation in this series and found to parallel rather closely the total serum calcium. There has been no instance of nephritis or nephrosis with the possible exception of case 4, in which an albuminuria developed that disappeared with rest. The chemical reactions of the blood and spinal fluid, however, seem quite relevant, a low total serum calcium being accompanied by a correspondingly low determination in the spinal fluid; e. g., from 3.4 mg. to 5 mg.

The close relationship of migraine to epilepsy [5] has frequently been stressed in the past, and recently [6] acidosis treatment has been instituted for the latter condition. Tetany is also an accompaniment of alkalosis together with low calcium ion values. Conversely, acidosis increases the calcium ion concentration in the circulating blood. Observations have been made that epileptic attacks may be mitigated by the exhibition of calcium. This I have in a minor degree been able to confirm.[7] On the basis of vascular contraction occasionally observed on the affected side in migraine, may one not assume the relaxing effect on the calcium ion?

Sterling [8] observed a case in a boy of 9 years and makes the assertion that it is a question of cases of migraine complicated at times by a latent tetany, at times by crises of manifest tetany evolving at the height of attacks of migraine or quite independent of them. This, however, is not the impression gained by the present study, since it is felt that the two conditions are definite components of a definite syndrome.

Without entering into a discussion as to the mechanism of parathyroid function in relation to vitamin D, I assume that the latter may quite well substitute for the former in raising plasma calcium.[2a] In this work both parathyroid extract and viosterol have been employed, but in most cases the latter because of its ease of administration. As previously observed, it is interesting to note that cases of operative tetany seen clinically do not exhibit the migraine syndrome. Consequently, the conclusion seems inevitable that in certain individuals a migrainous or convulsive tendency is held in check by the parathyroid glands by virtue of their power to maintain the proper level of serum calcium or by their apparently complementary factor, vitamin D.

In accordance with the work of Dragstedt,[9] who observed that tetany could be induced by the ingestion of animal protein in parathyroidectomized dogs and inhibited by a diet of milk and bread, it was observed that an attack could be induced in a patient under treatment with viosterol by a diet high in protein value.

Objection has been raised recently to these studies [10] in that mainly total calcium studies were employed and the diffusible fraction was not estimated. Parathyroid extract is known to increase both the diffusible and the nondiffusible fraction. It is admitted that in a given experiment "the total increase in the serum calcium after the ingestion of a calcium salt is due to an increase in the diffusible calcium fraction alone, while the nondiffusible calcium remains unaltered throughout the experiment." [11] It will be observed in the cases cited and all those studied with the administration of viosterol that there was an increase in the total serum calcium. This increase has been assumed in the present study to occur in the diffusible fraction, since it has also been shown that this fraction is raised by ultraviolet irradiation of the body.[12] The same authors contend [13] that tetany due to the alkaline shift in acid-base balance, viz., alkalosis, shows no decrease in diffusible calcium and is probably not associated with a lowered ionization of calcium. The assumption is made that the diffusible and the ionized calcium are identical. According to Cantarow,[14] this is by no means the case and as yet there is no entirely satisfactory method by which the concentration of calcium ionization may be determined, it probably depending on hydrogen, bicarbonate and phosphate ion concentration. Of the diffusible fraction, from 4.5 to 5.5 mg., according to various investigators, less than one half, namely, about 2 mg., exists in the ionized state.

The mechanism of action of parathyroid hormone and of vitamin D is naturally still speculative. It has been observed that vitamin D increases both the calcium and the phosphorus content of the blood in contradistinction to the former, parathyroid, which causes, in conjunction with an increase in calcium, a primary drop in the phosphate value.

About seventy patients complaining of periodic headaches associated with nausea and vomiting have been studied and most of them have been improved by the oral administration of viosterol or the parenteral administration of potent parathyroid extracts. Naturally, many cases have been studied in which normal calcium values obtained and are not included here.

The following abbreviated typical case histories are cited:

Case 1.—J. J. N., a man, aged 51, a meat cutter, April 4, 1930, complained of recurring headaches, over a period of years, associated with vomiting; the attacks at this time were coming about every week. They lasted about one day. He was completely disabled from work at the time. Physical examination revealed no abnormalities except a slight tingling of the hands on hyperpnea. The urine and hemoglobin were normal; the blood Wassermann reaction was negative. The patient was given viosterol, three drops three times a day, with complete relief. He reported two years later that no more attacks occurred as long as he took the drops.

Case 2.—H. M. Z., a man, aged 42, a farmer, April 15, 1929, complained that as long as he could remember he had had recurring headaches in the region of the right eye, associated with nausea and vomiting. The pain was occasionally generalized all over the head. There was marked photophobia during the attacks, with paresthesia of the hands and forearms but no cramping of the muscles. The family history revealed the same symptom complex in the mother. Physical examination revealed infected teeth, which were removed. Roentgenologically, the gallbladder was found to fill poorly and to empty slowly. There was no relief from the removal of foci of infection, and from the institution of a carefully studied diet with a view to the elimination of offending proteins. The blood calcium was 7.5 mg. The patient was given viosterol, 4 drops three times a day. He reported a few months later that his headaches were absent as long as he took the medicine but reappeared when he discontinued it. The blood calcium

5. Bisgaard, A.: Parathyroid Gland and Epilepsy, Acta med. Scandinav. **81**: 433 (Jan.) 1925. Longo, V.: Potassium and Calcium Content of Blood Serum in Normal and Epileptic Subjects, Boll. d. Soc. ital. di biol. sper. **3**: 112-114 (Jan.) 1928. Najera, Vallejo: Epilepsy, J. A. M. A. **95**: 1277 (Oct. 25) 1930.

6. Peterman, M. G.: The Ketogenic Diet in Epilepsy, J. A. M. A. **84**: 1979 (June 27) 1925. Dennig, H.: Acid Treatment of Epilepsy, Deutsche Ztschr. f. Nervenh. **103**: 275 (May) 1928.

7. Calcium studies are available in one case of operative parathyroid tetany, which finally terminated in death because of poor cooperation on the part of the patient. There was no heredity suggesting epilepsy, but the condition gradually progressed in severity. At first only slight spasms were present. These became associated with unconsciousness at a late date, the patient finally succumbing in typical status epilepticus. The serum calcium here normally read around 5 mg. per hundred cubic centimeters.

8. Sterling, M. W.: Rev. neurol. **2**: 485 (Sept.) 1928.

9. Dragstedt, L. R.: Am. J. Physiol. **77**: 296 (July) 1926.

10. Greenberg, D. M., and Gunther, Lewis: California & West. Med. **39**: 206 (Sept.) 1933.

11. Greenberg, D. M., and Gunther, Lewis: Diffusible Calcium of the Blood Stream, Arch. Int. Med. **50**: 855-875 (Dec.) 1932.

12. Clark, Janet H.: The Effect of Ultraviolet Light on the Condition of Calcium in the Blood, Am. J. Hyg. **3**: 480-482, 1923.

13. Greenberg, D. M., and Gunther, Lewis: Diffusible Calcium of the Blood Stream in Tetany, Arch. Int. Med. **47**: 660-673 (April) 1931.

14. Cantarow, Abraham: Calcium Metabolism and Calcium Therapy, Philadelphia, Lea & Febiger, 1931, p. 40.

was again determined while viosterol was being taken and found to be 9.5 mg.

CASE 3.—Mrs. J. A. H., aged 28, a housewife, March 5, 1932, complained of headaches of increasing severity, always localized around the right temple and eye, associated with nausea and vomiting and of definite periodicity. At times the feet would become cramped severely. There was no family history of migraine. Physical examination revealed essentially nothing abnormal. There were no discoverable foci of infection and the usual laboratory tests were negative. There was apparently no eyestrain and I was assured that her glasses were properly fitted. Elimination diets were likewise instituted without effect. The blood calcium during an attack read 6.5 mg. Ten units of parathyroid extract was administered as soon as the determination was made, supplemented by 10 drops of viosterol three times a day. There were no headaches until two months later. At this time the patient had also become pregnant and had partaken of a heavy meal of venison. Bread, milk and fruit juices were reinstituted and the attack passed off readily, the patient reported that the headaches "were not nearly what they used to be." Shortly thereafter the blood calcium read 12 mg. Two months later, in which interval she had contracted influenza and had experienced high fever with pain in the head, she reported that this pain was entirely different from the old sick headache. The blood calcium rose to 15.99 mg., at which time viosterol was discontinued. She was subsequently delivered of a normal child and without further administration of viosterol remained perfectly well until July, 1933. A sick headache developed at this time and the same medication was reinstituted, again with relief.

Blood and Spinal Fluid Readings in Case 4

Date	Medication	Total Serum Calcium	Spinal Fluid Calcium	Symptomatology
11/15/33	None for four days	7.5	3.5	Headache, nausea, vomiting and mild carpopedal spasm
11/21/33	Viosterol, 10 drops t. i. d.	10.0	....	No headache or nausea; slight muscle hyperirritability
11/25/33	Viosterol, 10 drops t. i. d.	9.11	4.64	Perfectly well; blood pressure cuff readily induced paresthesia of arm

September 26, after the drug had been discontinued for fifteen days, a typical attack of migraine developed. The blood calcium was 8.6 mg. and the spinal fluid calcium was 4.2 mg. Resumption of the usual medication in 5 drop doses has prevented further spells, but the patient reported recently a dull pain in the occipital region on stooping but none of the old disabling attacks. November 22, the blood calcium was 9.6 mg.

CASE 4.—Mrs. S. A., aged 26, a nurse, Aug. 13, 1932, referred by Dr. J. F. W. for thyroidectomy, complained of severe attacks of headache, nausea and vertigo, which were worse with the menses, becoming more frequent and more severe; there was extreme nervousness, tingling of the extremities and cramping of the calf muscles. Satisfactory determination of the basal metabolism could not be obtained, owing to extreme nervousness. The condition had existed since she was 10 years of age. The appendix and the gallbladder had been removed elsewhere in an effort to overcome the headaches. There was no history of food idiosyncrasy, and no demonstrable foci of infection existed. Physical examination revealed a fine tremor of the hands and a small enlargement of the thyroid. The pulse was 120 and the blood pressure 220 systolic, 130 diastolic. The Chvostek sign was slightly positive, as was also Trousseau's. Hyperpnea induced marked tingling of the extremities. A diagnosis of hyperthyroidism and hypoparathyroidism was made and a partial thyroidectomy performed without serious reaction. The patient's nervous condition was improved; the blood pressure receded to 164 systolic, 120 diastolic and the pulse to 76. However, the headaches and vomiting continued unabated and were of such severity as to require large doses of morphine to control them. The blood calcium was found to be 7.6 mg. This was taken during a particularly severe paroxysm of pain, which was the first real attack that I observed. At this time the patient complained of numbness everywhere and exhibited carpopedal spasm. Parathyroid extract, 20 units, was immediately administered, with dramatic relief. This was supplemented with 10 drops of viosterol three times a day. She was able to return to work in two days and reported complete cessation of the head pain and nausea. After about one month the dosage of viosterol was reduced to 7 drops, which promptly resulted in a mitigated attack. Ten drops was immediately resumed and, in addition, parathyroid extract, 10 units every other day for eighteen doses. This again resulted in complete relief. The latter medication was administered elsewhere and no chemical determinations were available. An attack of albuminuria with hypertension compelled her to resort to bed rest and a restricted diet. Nov. 15, 1933, after interruption of viosterol for four days, the headaches and nausea associated with mild carpopedal spasm recurred. The blood pressure readings had receded to 156 systolic, 90 diastolic, and examination of the urine revealed no pathologic changes.

The blood and spinal fluid readings in the accompanying table seem very significant, revealing a symptomless case with the chemistry of calcium approaching normal.

CASE 5.—R. K., a schoolboy, aged 12 years, May 16, 1932, complained of irregular respiration on falling asleep, cramping of the hands and feet, and a severe boring pain in the region of one eye or the other associated with nausea and vomiting, all coming in definite attacks. A severe attack of scarlet fever six months prior to the present illness was followed by tonsillectomy. Headache was particularly noted when the patient awakened suddenly from a spell of apnea. Apnea was always followed by a period of hyperpnea. Physical examination revealed blurred disk margins in each fundus, with some exudate on the vessels. Tingling in the extremities was readily induced by hyperpnea. The Chvostek sign was then positive. No other abnormalities were noted. Spinal puncture revealed clear fluid under normal pressure; the cell count showed 37 mononuclears and globulin strongly positive. The blood and spinal fluid Wassermann tests were negative. The blood calcium was 6.5 mg. Examination of the urine was negative. There was an immediate improvement when viosterol was administered. The attacks of irregular respiration ceased and there were no further headaches. One month later the blood calcium was 13.33 mg. Medication was discontinued without consent and the symptoms all recurred. A dosage of 15 drops was commenced again with relief. Calcium then read 12.5 mg. Despite medication after a period of complete freedom, the patient experienced a very severe spell and died in convulsions following a period of apnea.

The impression gained from this case was that the condition was chronic encephalitis complicated by a latent hypofunction of the parathyroids or that the type of respiration induced reduced the ionized calcium to the point of hyperirritability.

CASE 6.—Mrs. P. E. J., a housewife, aged 63, complained, Oct. 13, 1931, of attacks at night characterized by convulsions, cyanosis and loss of consciousness followed by deep sleep, all associated with severe one-sided headache but no nausea. The onset had been recent. She also complained of some cramping of the calf muscles and drawing in of the thumbs. Physical examination revealed some cardiac enlargement, with a blowing systolic murmur. The blood pressure was 166 systolic, 110 diastolic. The usual laboratory tests all gave normal results and the blood calcium was 8.8 mg. Viosterol, 3 drops three times a day, was administered and two months later the patient had experienced only one attack and felt much improved, with the calcium reading 9.6 mg. The dosage was then increased to 5 drops and in November, 1932, the patient reported that there had been only one additional spell, and that this was definitely followed by a right-sided headache but no nausea. Again she discontinued medication completely on her own initiative and in two weeks the symptoms recurred, again to be held in check only by resumption of medication. July 20, 1933, the blood calcium was 9.7 mg. September 20, after interruption of the drug for one week, the blood calcium was 10.2 and the spinal fluid calcium 4.2. October 22, the patient reported one attack

followed by a very severe right-sided headache despite the 5 drops of viosterol. The thumbs cramped vigorously and this was particularly noticeable previous to the spell. The blood calcium was 7.9 mg. Apparently in this case a larger dose was required, and this has been instituted.

SUMMARY

A number of cases of typical so-called idiopathic migraine have been studied with respect to blood calcium values, which have been found to be uniformly somewhat depressed. Six cases have been chosen at random, ranging from relatively mild to very severe, the last being associated with epileptiform convulsions. This entire group has been benefited by means taken to raise the values of calcium to normal.

CONCLUSIONS

1. It is assumed that symptoms of migraine and tetany are maintained dormant in this group by the calcium regulating mechanism.

2. One or the other complex may predominate. Whether unilateral headache and nausea with or without vomiting should be included in the picture recognized as tetany remains for further study.

350 E. Street.

Clinical Notes, Suggestions and New Instruments

THE USE OF SALYRGAN IN ONE PATIENT, OVER A PERIOD OF THREE YEARS, FOR RECURRING ASCITES AND EDEMA ASSOCIATED WITH CARDIAC FAILURE

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From the Cardiac Clinic of Emory University School of Medicine.

Mercurials have been used as diuretics for many years. More recently salyrgan, an aqueous solution containing about 37 mg. (one-half grain) of metallic mercury to the cubic centimeter, has been used in treating patients with abnormal collections of fluid in the tissue or body cavities.

That mercury may be a renal irritant is a well known fact. Salyrgan, however, has been used repeatedly over long periods of time even in those with previously existing renal disease without untoward effects.[1] Occasionally patients are encountered who have an idiosyncrasy to mercury, and reactions such as convulsions or anuria may occur. Only one such instance has been recorded in the literature,[2] and this patient made an uneventful recovery. Because of this very infrequent idiosyncrasy, caution must be used in administering the initial dosage of this drug. It should be given first in 0.5 cc. doses intramuscularly. If no reaction occurs within forty-eight hours, it may then be given in doses of from 1 to 4 cc. intravenously or intramuscularly.

The present case report is added to the literature to show that salyrgan may be used at frequent intervals over a long period of time without causing renal damage and that it may be quite efficacious in the removal of ascites and edema and thereby increase circulatory efficiency.

M. W., a native Negress, aged 19 years, was admitted to the Grady Hospital in May, 1929. The diagnosis was rheumatic heart disease with mitral stenosis and an acute circulatory failure. She stated that she had experienced attacks of rheumatism all her life. The last attack of acute polyarthritis occurred six months before. Symptoms of cardiac failure first began three months before.

She was rather small and very dark and was in an advanced state of cardiac decompensation. There was moderate dyspnea and cyanosis. There was very little orthopnea. The peripheral veins were distended. There was a moderate pitting edema of the lower extremities. The liver was about 6 cm. below the costal border, tender and pulsating. The abdomen was tense with ascites. The heart was considerably enlarged. A teleoroentgenogram showed the supracardiac width to be 4 cm., the right margin 6 cm. and the left margin 12.5 cm. The total diameter of the chest was 28 cm. There was a systolic vibration at the apex. No definite thrills were detected. The apical first sound and the pulmonic second sound were accentuated. There was a harsh (grade 4) systolic murmur over the entire precordium but was best heard at the apex. In the left lateral position a mid-diastolic murmur was heard at the apex. The heart rate was 120 per minute and the rhythm was regular. The blood pressure was 115 mm. systolic and 70 mm. diastolic. There was no evidence of arteriosclerosis.

There was 2 plus albumin in the urine and there were a few red blood cells and casts in the sediment. The phenolsulphonphthalein excretion was 60 per cent in two hours. The blood constituents were normal, the blood Wassermann was negative and the blood count was not abnormal.

The abdomen was tapped, and 5 liters of straw-colored fluid with a cell count of 170 lymphocytes per cubic centimeter was withdrawn.

There was an irregular elevation of temperature, and blood cultures made on three successive days showed a growth of nonhemolytic streptococci. Positive blood cultures were never obtained again.

The patient remained in the hospital five weeks, the abdomen was tapped at weekly intervals, she was digitalized, and circulatory competence was finally established. During the next fourteen months there were thirteen admissions to the hospital for recurring cardiac failure, and an abdominal paracentesis was necessary every seven to fourteen days, from 3,000 to 5,000 cc. of fluid being withdrawn each time. One year after her first admission to the hospital she developed another attack of acute polyarthritis. There was an irregular elevation of temperature for about five weeks and subcutaneous painful nodules occurred over the long bones. These appeared and disappeared within a period of forty-eight hours. Cardiac failure became marked even with complete rest in bed.

Treatment thus far had consisted of rest in bed, digitalis, sedatives, diuretics by mouth, and salyrgan at infrequent intervals. Abdominal paracentesis was necessary almost every week during the first year of her illness.

During the second year of the patient's illness the regular administration of salyrgan intramuscularly was begun in doses of 1 to 2 cc. at intervals of three to seven days. Diuresis was always prompt and profuse; about 5 liters of urine was excreted during the first eighteen hours after an injection. Preceding the injections with ammonium chloride in 1 Gm. doses did not increase the diuresis. After the regular administration of salyrgan was begun, paracentesis of the abdomen was no longer necessary. Circulatory competence was greatly improved. During the second year of her illness the hospital admissions were reduced from thirteen to two and during the third and fourth years there was only one entry into the hospital. During the past three years she has been given 175 cc. of sayrgan. No abdominal paracenteses have been done during this time and her circulatory competence has been such as to allow the performance of light household duties.

A study of the patient's renal function after the prolonged administration of salyrgan shows no evidence of renal damage. There is now only a trace of albumin in the urine, no red cells are seen, and only an occasional cast. The blood chemistry is within normal limits and the phenolsulphonphthalein excretion is 50 per cent in two hours.

Salyrgan has proved of inestimable value in removing ascites and edema and improving circulatory efficiency in this patient and no evidence of renal damage can be demonstrated after its continuous use for three years. We believe that it should be used more often for the removal of abnormal accumulations of fluid in the body tissues or cavities and that it may be used without fear of renal damage even in those with preexisting renal disease.

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1. Wiseman, J. R.: Prolonged Use of Salyrgan as a Diuretic: Report of 270 Injections in Five Years in One Case, J. A. M. A. **99**: 114-115 (July 9) 1932.

2. Andrews, C. P.: Toxic Effects of Intravenous Salyrgan, Lancet **2**: 131-132 (July 18) 1931.

A SKIN MANIFESTATION FROM THE EXCESSIVE ADMINISTRATION OF VITAMINS

F. F. PFISTER, M.D., WEBSTER, S. D.

Skin eruptions of the eczematous type are not unusual in early childhood. Rashes at all akin to true eczema are classified as eczema, and the usual routine of local applications is followed with various manipulations of diet, it being accepted as a fact that the condition is an eczema without a doubt. I do not say that eczema is caused by excessive doses of vitamins but that certain cases which are classified with eczema are readily cleared up by the discontinuance of the vitamin with no local applications whatever.

The type of rash to which I refer may be described as a fine papular rash superimposed on an erythematous base, looking much like many of the early eczemas. I have not seen any that presented a weeping surface. The face has been the most common site for the eruption.

The causative factor may be a particular idiosyncrasy to vitamin solutions, but I believe it is due to an excess of vitamins. It has been noted chiefly since the use of concentrated vitamin solutions such as viosterol and halibut liver oil. I do not believe the excessive ingestion of fat need be considered, as the cases to which I refer had been treated with vitamin concentrate.

I think the impression prevails among medical men that vitamins can be given in any amount, almost with impunity. But I believe that as more and more is known about vitamins it will become obvious that they too have their limitations. Until a definite measuring stick is found to outline the limits of vitamin dosages, this possible source of some of the difficulties must be kept in mind.

I shall report here only two cases which to me are striking examples of a skin manifestation from the excessive administration of vitamin. I am exceedingly familiar with the first case to which I refer, as it occurred in my own family.

CASE 1.—F. P., a boy, aged 11 months, had progressed nicely and enjoyed normal growth and development. In addition to his diet he had been given cod liver oil, 3 teaspoonfuls a day. His skin was perfectly clear and there had been no eruptions. When the patient was 11 months old, halibut liver oil with viosterol was started in place of cod liver oil. I noticed on the fourth day after the oil was started that there was an eczematous eruption, very fiery red and with a papular rash showing through the reddened area. At this time I questioned about the various articles of diet; there had been no deviation, no change in soap or anything unusual except that haliver oil with viosterol had been given instead of cod liver oil. Further inquiry revealed that through a mistake the baby had received 3 teaspoonfuls of haliver oil with viosterol daily for the four days instead of a few drops as ordered. If I had been purchasing the haliver oil I would have noticed the error before the baby had had sufficient vitamin solution to blossom out in such a rosy eruption. The baby's uncle, a salesman of this preparation, had supplied him with a liberal quantity of samples. The oil was stopped and without any treatment the rash cleared up entirely in a few days. He was not given any haliver oil or other vitamin solution for a couple of weeks, until my curiosity caused some experimentation. I again gave the baby 3 teaspoonfuls daily of haliver oil with viosterol and on the third evening the redness recurred and on the fourth day a full-blown eczematoid facial eruption appeared. It cleared again by the mere stopping of the oil. He was again put on haliver oil with viosterol, 15 drops a day, and the skin showed no eruption whatever. However, about five months later, with a clear skin in the interim, he got hold of some gelatin capsules containing 3 minims (0.2 cc.) each of haliver oil with viosterol, and as near as I could check up he had eaten twenty-seven capsules at one time. The next evening he again presented the eczematoid rash, which cleared in a few days after removal of haliver oil from the daily regimen. Since I have exercised more caution in the amount of haliver oil given him he has had no eczematoid eruptions whatever. Nothing was noted in regard to the rest of the body—no gastro-intestinal upset and no abnormal manifestations of any kind were noticed.

CASE 2.—P. S., a boy, aged 10 months, the son of a minister, was brought to me with a skin eruption on the face, of two weeks' duration. It appeared to be much like an eczema—a papular rash over a reddened area. The baby's uncle, a druggist, had given calamine lotion and white tar ointment with absolutely no relief or clearing of the rash. Since I had been on the watch for these certain types of eczematous rashes, the first question I asked was the kind of vitamin solution given the baby. The mother answered that she had given the child cod liver oil until just a few days previously, when she had started the baby on viosterol, giving 3 teaspoonfuls daily. The parents had also been the recipients of two large size bottles of viosterol, which had been given them and not purchased, and consequently there was a delay in noticing the error in dosage. The baby was taken off viosterol, no local applications were given and within four days the skin was entirely clear.

These two cases, of course, are the extreme both in dosage and in the severity of the rash. My experience with skin conditions associated with vitamin overdosage has prompted me to be on the lookout for this manifestation, and I have encountered many facial rashes of varying degrees of severity which have cleared up after the vitamin solution was discontinued, and the dosage was later adjusted. I have reported these observations at a medical society and I have several letters from physicians in the nearby towns who had noted several cases that cleared up after the vitamin solution had been stopped or the dosage adjusted.

No attempt has been made to go into the theoretical causative factors concerned in this group of cases. A general belief among both the medical profession and the public is that large doses of vitamin preparations can be given without any deleterious effects. The observations in the cases reported will tend to refute this belief.

From the Peabody Clinic.

THE PROTECTION OF BODY CASTS BY CELLOPHANE

BERNARD N. E. COHN, M.D., PHILADELPHIA

The adequate handling of children to prevent soiling of body casts presents a difficult problem even in orthopedic institutions where the nursing personnel is especially trained to care for such patients. In general hospitals one depends on a regimen of watchful waiting to cope with such a situation, often without success. It taxes the patience of the surgeon who applies a satisfactory body cast only to find it so soiled in a few days that a new one is required. In order to obviate such altogether too frequent occurrences, a simple and inexpensive means was sought.

Various methods for accomplishing this purpose are already in vogue, the most common of which is shellacking the part around the perineal region or covering it with oiled silk. Neither of these is entirely satisfactory from the standpoint of time and expense involved. It has been found that cellophane affords the easiest and most inexpensive means to protect a cast.

After a cast has been trimmed and has set, sheets of cellophane are cut to conform with the configuration of the perineal region. The edges are then held in proper position with adhesive tape. It is best to use sufficient cellophane to extend at least ten inches above the opening for the genitalia and for the same distance along the medial surface of the thighs, especially in young children. This procedure can be executed easily by any nurse, even without special training in the care of children in body casts.

The cellophane should be changed at least every other day, since exposure to moisture for longer periods renders it moldy and foul smelling.

It is not necessary to purchase sheets of new cellophane for this procedure. Today many articles are wrapped in cellophane and the wrappers may be stored in a dry place until needed. Cellophane covers from loaves of bread, for example, serve adequately.

From the orthopedic service of Dr. George Wagoner at the Bryn Mawr Hospital, Bryn Mawr, Pa.

Special Article

INTRAVENOUS HYDROCHLORIC ACID IN THE TREATMENT OF DISEASE

More than thirty years has passed since Metchnikoff[1] proposed his now famous thesis of phagocytic immunity. The stimulus furnished by his work was of inestimable value to the subsequent rapid development of immunology; but the original views held by Metchnikoff and some of his followers have been modified in the light of more recent investigations. It is now generally appreciated that certain humoral factors are necessary even for the phagocytic reaction. As stated by Topley and Wilson,[2] "The views of the extreme 'cellular' school . . . are obsolete in their original dogmatic form." Despite present teachings as to the complex nature of immune reactions, the principle of phagocytosis in the original restricted sense has enjoyed periodic recrudescence in its practical applications to therapeutics.

About five years ago, stimulated by the results of Hanes[3] in the treatment of pruritus ani by the local injection of hydrochloric acid, Burr Ferguson[4] of Montgomery, Ala., proposed the parenteral use of this therapeutic agent in other diseases. Ferguson[5] wrote:

> For several years I had been searching for a better agent than various preparations of mercury, arsenic, quinin or vaccines, for the control of the white cells, the administration of which agents was frequently attended with much pain or a pronounced inflammatory reaction. In November, 1927, I had the good fortune to find this better agent for the stimulation of the phagocytes in hearing a discussion of pruritus ani and its treatment by the local injection of a 1:3,000 solution of hydrochloric acid, by Dr. Granville S. Hanes of Louisville. Seven years before, the speaker said he had determined that pruritus was an infection and that he would attempt the elimination of the infecting organisms by the injection of this acid solution under the site of the foci of pruritus. Plates were shown of many cases of pruritus and prolapse of the rectum, before and after this therapeutic procedure, which left one in no doubt of its efficacy. Apparently the germs had been burnt up by their immersion in the acid solution, and the manifestation of their presence were healed. Dr. Hanes, however, said that this purely local effect in no way explained the improvement he had seen in some of these patients who had eczema or wounds in other parts of the body, in which the clinical results were quite as good as at the site of the injection of the acid, and that he was utterly unable to explain these phenomena.
>
> This talk of Dr. Hanes furnished the clearest confirmation of the truth of the generalization of Metchnikoff that "the one constant element of immunity, whether innate or acquired, is phagocytosis" that I had yet heard, and I knew that the agent for which I had searched had been found. For it was reported that there had been few reactions after the injection of very large quantities of this solution, and I further knew that such clinical results could only be seen with the accompanying marked stimulation of the white cells. Further, it was fascinating to think of putting this normal reagent of the stomach into the body, by its injection.
>
> Determinations done in the City Venereal Clinic with a variety of infections the next day proved that the subcutaneous injection of the acid solution was immediately followed by an increase in the numbers of the white cells. During the following days the expected clinical results were seen in a wide variety of infections. Any therapeutic procedure, however, is always attended with objections. With this procedure these complaints came from the patients, many of whom did not like the swelling or bumps that were left for several days after the subcutaneous injection of the acid. To overcome this untoward effect, the acid was injected intramuscularly. This procedure was too uncomfortable and could not be done more than about twice a week, and frequently a patient would be seen who really needed a more frequent stimulation of the phagocytes.
>
> About two years ago, letters were exchanged frequently by the writer and Dr. Francis E. Park of Boston on the use of the hydrochloric acid in infections. In one of Dr. Park's letters, he asked why the acid solution might not be injected intravenously. I could see no reason why it might not be done safely. So I took two Negro patients from the clinic, my assistant and myself, for the determinations, following the injection of 10 cc. of hydrochloric acid in distilled water 1:1,500, with much benefit to the patients and no harm or inflammatory reaction to the controls. However, the following leukocytosis was not as well maintained as that after the intramuscular injection. This objection was trivial, however, as the cells could be much oftener stimulated. I am delighted to take this opportunity to thank Dr. Park for his question.
>
> To use the hydrochloric acid intravenously one must overcome a number of inhibitions, first that acid cannot be put directly into the alkaline blood, for fear of the dreaded acidosis . . .; secondly, that one must use a specific poison or antitoxin, for its particular effect against the infecting organisms, and, last, that some allergic reaction may follow the injection of an acid.
>
> The report in the foregoing pages shows that there is no danger in the injection of this acid into the blood stream. Further, that this intravenous injection of this drug that has been used since the time of Glauber, as an aid to digestion, is altogether comparable to the intravenous use of mercury and arsenic in this generation. These drugs had been used for several hundred years by the mouth, or by inunction, but one rarely hears of them in any way now. The promptness of the clinical results caused this change. The biniodide, calomel and other mercurial preparations and the various preparations of arsenic did stimulate the white cells, but mercurochrome, metaphen and other intravenous injections with this same active principle were much more potent creators of hyperleukocytosis.

Following Ferguson's glowing reports[6] of clinical recovery in practically every disease in which the new remedy was tried, enthusiastic support came from other physicians, several of whom apparently believe that they have found in this simple solution a long sought for panacea.[7]

It would be surprising indeed if intravenous therapy of this sort, so assiduously and earnestly supported and promoted by reputable clinicians, and by at least one manufacturer of solutions for intravenous use, should not long ago have been subjected to careful scrutiny by its proponents from the standpoints both of pharmacology and of immunology. Yet it appears that this new treatment was tried on human beings on a purely empirical basis and without known experimental background of any kind.

The idea of stimulating phagocytosis in the prevention and treatment of disease is not new. This problem

1. Metchnikoff, Elie: L'immunité dans les maladies infectieuses, Paris, 1901.
2. Topley, W. W. C., and Wilson, G. S.: Principles of Bacteriology and Immunity, New York, William Wood & Co. **2**:632, 1929.
3. Hanes, G. S.: Clin. Med. & Surg. **35**:581 (Aug.) 1928.
4. Ferguson, Burr: Clin. Med. & Surg. **35**:563 (Aug.) 1928.
5. Ferguson, Burr: Am. Med. **37**:244 (April) 1931.
6. Ferguson, Burr: J. Intrav. Therap. **1**:9, 1932; Clin. Med. & Surg. **39**:814 (Nov.) 1932.
7. Smith, N. M.: Clin. Med. & Surg. **36**:388 (June) 1929. Salter, W. M.: Am. Med. **25**:386 (June) 1930. Howell, W. I.: Clin. Med. & Surg. **39**:683 (Sept.) 1932. Colby, C. de W.: Southern Med. & Surg. **94**:264 (May) 1932. J. Intrav. Therap. **1**:7, 1933. Howell, W. I., and Ferguson, Burr: M. World **51**:238 (June) 1933. Case reports submitted to the editor by Burr Ferguson and by W. I. Howell: D. de Bezedits, Coyuca de Catalan, Mexico; F. R. Clemson, Thornville, Ohio; R. A. Douglas, Huntingdon, Tenn.; Burr Ferguson, Montgomery, Ala.; P. L. Gordon, Mount Savage, Md.; O. G. Harrington, Niagara Falls, N. Y.; W. I. Howell, Lexington, Tenn.; F. J. James, Paris, Ill.; J. W. Jervey, Greenville, S. C.; T. B. Taylor, Bastrop, Texas.

has been the subject of extensive investigation by a host of workers for many years.

Mikulicz,[8] for instance, thirty years ago, tried with indifferent success the effect of a number of substances on mobilization of leukocytes in peritoneal exudate in an attempt to protect the peritoneum against infection, a project more recently brought to successful consummation by Steinberg and Goldblatt.[9]

Gehrig[10] in 1915 presented a detailed and comprehensive list of substances used by various observers, including himself, which comprises a large portion of the active agents known to pharmacology and immunology. Curiously enough, hydrochloric acid is listed among the agents found to be inactive in this respect.[11] True, reference to the original paper, published forty-five years ago, reveals that the acid was given by mouth and not parenterally; yet if Ferguson's thesis as to the mode of action of this agent on the acid-base equilibrium is correct, the acid should be quite as active orally as by any other route, as will be brought out later. While some of the substances used for this purpose do undoubtedly produce a mobilization of white cells in the blood stream, the work of Wright and Douglas[12] and of others has demonstrated that phagocytosis can occur only in the presence of the proper humoral factors ("opsonins").

Leukocytosis per se therefore does not necessarily mean increased resistance to disease. Wells[13] has said: "Many substances have been used to increase the number of leukocytes in the circulating blood in the hope of increasing resistance to infections, a result that does not seem to follow artificial leukocytosis with any recognizable uniformity."

To establish claims of therapeutic benefit through the agency of leukocytosis, it is necessary to demonstrate that mobilization of white cells actually occurs (and in the light of recent work, this is far more difficult than is commonly supposed);[14] that extensive phagocytosis of the organism in question may take place;[12] that recovery occurs in treated animals or patients in substantially greater proportion than in parallel controls. This of course would not prove in any case that the leukocytes were entirely responsible for recovery but would merely indicate that there is a reasonable probability that they have aided in the improvement.

In evaluating the results claimed by Ferguson and his adherents, a number of pertinent questions must be answered:

1. What is the precise nature of the therapeutic agent; what is meant by "1:1,000" or "1:1,500" hydrochloric acid?

2. Does this solution actually produce leukocytosis? If so, by what mechanism?

3. If a leukocytosis is produced, is phagocytosis materially increased?

4. What, if any, dangers are involved in the intravenous injection of hydrochloric acid?

5. Do such injections have effects of possible therapeutic value other than the alleged stimulation of phagocytosis?

6. Is the clinical use based on adequate experimental evidence?

7. Is there satisfactorily controlled evidence of therapeutic benefit in clinical cases?

THE THERAPEUTIC AGENT

To describe a solution of hydrochloric acid as "1:1,000" is ambiguous: This may mean, for instance, 1 part by weight of hydrogen chloride in 1,000 parts by weight or by volume of water, or 1 part by weight or by volume of a solution of concentrated hydrochloric acid (about 35 per cent by weight of hydrogen chloride) diluted to 1,000 parts by weight or by volume with water.

With but a single exception, a brief note by J. H. Hendren,[15] no mention is made in the literature of the possible ambiguity involved in the statements of acid content. According to Hendren ". . . one drop of C. P. hydrochloric acid in three ounces of distilled water will make the desired solution. . . ['1:1,500']." Apparently "1:1,500" in this case is intended to mean one part by volume of approximately a 35 per cent solution (by weight) of hydrogen chloride, made up to about 1,500 parts by volume with water. If such confusion exists among the proponents of this therapy, those interested in estimating its true status must necessarily meet with great difficulty at the outset.

In order to determine accurately the nature of the solution widely employed, the A. M. A. Chemical Laboratory was asked by THE JOURNAL to examine specimens of ampules purchased on the open market. These were manufactured by the Loeser Laboratory, New York, active commercial proponent of intravenous hydrochloric acid. The A. M. A. Chemical Laboratory reported as follows:

"LOESER'S INTRAVENOUS SOLUTION"

Original specimens of Loeser's Intravenous Solution, Hydrochloric Acid 1-1000, and Hydrochloric Acid, 1-1500 (Loeser Laboratory, New York) were submitted to the A. M. A. Chemical Laboratory for examination at the request of THE JOURNAL.

The labels on the ampules for the respective concentrations bore the following statements:

Hydrochloric Acid
1 in 1000
10 cc Plus

A sterile solution of one part C. P. Hydrochloric Acid in 1000 parts of distilled water for injection purposes

Loeser Laboratory,
New York

Hydrochloric Acid
1 in 1500
10 cc Plus

A sterile solution of one part of C. P. Hydrochloric Acid in 1500 parts of distilled water for injection purposes.

Quantitative determinations yielded the following:

	Ampules labeled	
	1 in 1000	1 in 1500
Per cent by weight of HCl found	0.0322	0.0216
Gm. of HCl found per liter	0.3209	0.2156
Gm. of HCl found per 1,000 Gm. of solution	0.3222	0.2164
Minims of diluted hydrochloric acid U. S. P. X per 10 cc. (based on upper and lower U. S. P. limits)	0.47–0.52	0.31–0.35
Per cent by weight of claimed contents for 1 liter of solution.	(A) (B)	(A) (B)
(1:1,000 and 1:1,500 by volume, respectively)	78 to 69.9	78.6 to 70.5
Per cent by weight of claimed contents for 1,000 Gm. of solution.	(A) (B)	(A) (B)
(1:1,000 and 1:1,500 by weight, respectively)	92.1 to 83.7	92.7 to 84.3

NOTE.—(A) This figure is based on a strength of hydrochloric acid of not less than 35 per cent by weight of HCl, as

8. von Mikulicz, J.: Arch. f. klin. Chir. **73**: 347, 1904.
9. Steinberg, B., and Goldblatt, H.: Surg., Gynec. & Obst. **57**: 15 (July) 1933.
10. Gehrig: Ztschr. f. exper. Path. u. Therap. **17**: 161, 1915.
11. Pohl, J.: Arch. f. exper. Path. u. Therap. **25**: 51, 1889.
12. Wright, A. E., and Douglas, S. R.: Proc. Roy. Soc. **72**: 357, 1904; **73**: 128, 1904-1905; **74**: 147, 159, 1905.
13. Wells, H. G.: Chemical Pathology, ed. 5, Philadelphia, W. B. Saunders Company, 1925, p. 279.
14. Shaw, A. F. B.: J. Path. & Bact. **30**: 1 (Jan.) 1927.
15. Hendren, J. F.: Clin. Med. & Surg. **39**: 815 (Nov.) 1932.

required according to the Report of the Committee on Guaranteed Reagents of the American Chemical Society.

(B) This figure is based on a strength of 38.5 per cent HCl, indicated on the label of the product of a reputable manufacturer as the upper limit of HCl content.

It will be noted that wide variation (e. g., 92.7 to 70.5) in per cent by weight of claimed contents is evident, depending on what strength of acid was used and whether or not the acid was diluted in proportion by weight or by volume. If the percentage of HCl in the concentrated acid was above 38.5, the percentage by weight of claimed content found present in the ampules would be still less.

It is to be noted that 10 cc. of the solution in the 1:1,000 ampule contains the equivalent of about ½ minim of diluted hydrochloric acid U. S. P.; 10 cc. of the solution in the 1:1,500 ampule contains the equivalent of about ⅓ minim.

Not only, then, is there ambiguity in the statements of concentration in the literature, but the commercial solutions that were examined for THE JOURNAL appear not to contain the claimed amount of HCl, no matter on what basis calculated. It is not difficult to estimate the probable therapeutic effects of ⅓ to ½ minim of diluted hydrochloric acid U. S. P., which the A. M. A. Chemical Laboratory found to be the equivalents of the Loeser solutions.

PRODUCTION OF LEUKOCYTOSIS

It seems not unreasonable to demand that, in order to establish a claim for alteration in the level of the white cell count by a pharmacologic agent, the change must exceed the probable error of the method used for counting and must exceed also the maximum range of the variations that are known to occur in the normal individual from hour to hour during the day. In none of the material presented by Ferguson or by his colleagues is there a description of the method used for estimation of the cells, nor is there anything which indicates an appreciation of the large error inherent even in the most meticulous technic. Many of the alleged leukocytoses obtained by these clinicians fall within the usual error of counting (probably at least 10 per cent); others fall readily within the range of the large natural fluctuations demonstrated by Shaw [14] to occur in normal persons, independent of food intake, exercise, sleep or body temperature. As reported by Piney,[16] ". . . during the twenty-four hours, the total leukocytes of man exhibit two tides, each of about twelve hours' duration. The day tide begins in the forenoon, reaches its flood in the afternoon, and ebbs during the evening. The night tide begins in the evening, reaches its height in the hours after midnight, and falls away in the morning." According to Kolmer and Boerner,[17] "A count made during the afternoon may be 2,000 higher than one made in the morning." Shaw's work indicates that even a greater normal range is possible. There is no evidence in the literature examined that this important source of error was even considered by the proponents of intravenous hydrochloric acid.

As the reported changes in cell count following the acid injections appear in large part to tend in the upward direction, it seems not improbable, although this is by no means definitely proved, that a leukocytosis of small magnitude actually does occur in some cases. But, as stated by Jordan,[18] "the production of leukocytosis . . . is in itself of little value unless at the same time the amount of opsonin in the blood, the specific opsonic index, is high enough to favor phagocytosis."

The published literature reviewed on intravenous hydrochloric acid does not reveal a single determination of the opsonic index.

It has been claimed that the acid mediates its effect through changes in the acid-base equilibrium of the blood. Analogy has been drawn [5] between the effect of this treatment and the nitrohydrochloric acid treatment of allergic conditions proposed several years ago by Beckman.[19] Reference to the latter's work reveals that a dose of 0.6 cc. of nitrohydrochloric acid (N. F. V.) was administered orally, properly diluted, four times a day, or a total daily dose of 2.4 cc. This is equivalent in acidity to about 8.9 cc. of diluted hydrochloric acid, U. S. P.; about 400 times as much acid as was found in 10 cc. of Loeser's "1:1,500" hydrochloric acid, or about 270 times the amount in 10 cc. of the "1:1,000" solution.

Whereas the quantity used by Beckman might conceivably alter the acid-base equilibrium, it is difficult to see how the quantities injected as the Loeser solutions tested by the A. M. A. Chemical Laboratory could have any appreciable effect on this balance. Any significant pharmacologic action of such a solution must be mediated through some other mechanism. If it were intended to cause a shift in the equilibrium toward the acid side, it seems surprising that the parenteral route should have been used at all; J. B. S. Haldane [20] and others have shown that it is quite possible to produce marked changes of this nature by the oral administration of ammonium chloride, for instance.

The "1:1,000" Loeser solution examined by the A. M. A. Chemical Laboratory is about 0.008 normal and the "1:1,500" about 0.006 normal. Not only are these solutions greatly hypotonic, which alone could result in hemolysis on contact with blood, but according to Ponder [21] it requires only a 0.002 normal solution of hydrochloric acid to produce destruction of erythrocytes. It appears, then, that at least one irreversible change in the blood stream which such solutions produce is laking of red cells passing the immediate vicinity of the needle point during the injection. In addition, changes would probably take place in the wall of the vein itself and might set up noxious reflexes.[22] Essentially the same effects, but possibly to a somewhat lesser degree, might be expected from the injection of distilled water.

More than thirty years ago, it was claimed by Gilbert and Herscher [23] that the intravenous injection of distilled water in a dog produced a marked and lasting leukocytosis. The quantity of water injected (21 cc. per kilogram) was much larger than the amounts of hydrochloric acid solution used clinically by Ferguson and others; but the changes induced in the blood stream are no doubt similar and probably differ only in degree. As was pointed out in THE JOURNAL [24] some time ago,

16. Piney, A.: Recent Advances in Haematology, ed. 2, Philadelphia, P. Blakiston's Son & Co., 1928, p. 118.
17. Kolmer, J. A., and Boerner, F.: Approved Laboratory Technic, New York, D. Appleton & Co., 1931, pp. 75-76.
18. Jordan, E. O.: Textbook of General Bacteriology, ed. 10, Philadelphia, W. B. Saunders Company, 1931, p. 175.
19. Beckman, H.: Treatment in General Practice, Philadelphia, W. B. Saunders Company, 1930, pp. 339-340.
20. Haldane, J. B. S.: Lancet **1**: 537 (March 15) 1924; Possible Worlds, Harper and Brothers, New York, 1928, Chapter XVII.
21. Ponder, Eric: The Erythrocyte and the Action of Simple Haemolysins, Oliver and Boyd, Edinburgh and London, 1924, p. 121.
22. Intravenous Injections—Loeser's Products, Queries and Minor Notes, J. A. M. A. **101**: 544 (Aug. 12) 1933.
23. Gilbert and Herscher: Compt. rend. Soc. de Biol. **54**: 615, 1902.
24. Treating Gonorrhea by Colloidal Mercury Sulphide and Intravenous Hydrochloric Acid, Queries and Minor Notes, J. A. M. A. **97**: 1983 (Dec. 26) 1931.

the effect produced is in all likelihood that of a nonspecific protein, as the result of liberation of the contents of erythrocytes. Probably the humoral mechanisms of defense would thereby also be stimulated in addition to the mild leukocytosis that appears to occur; but this is purely conjecture. If the effect desired is that of the acid itself, assuming that there is some valid reason for choosing the intravenous route, it would seem preferable to dissolve the hydrochloric acid in physiologic solution of sodium chloride; if the effect is to be that of a hypotonic solution, plain distilled water should do practically as well. It is not recorded that either was tried by the propagandists for this form of therapy.

In the report of a special committee of the Council on Pharmacy and Chemistry on the status of intravenous therapy,[25] it was cautioned: "all solutions [for intravenous use] should conform as closely as possible to the reaction of the normal blood . . ." and "solutions should generally be nearly isotonic with the blood. . ."

CLINICAL EVIDENCE

The clinical reports encompass a variety of different diseases that include practically the whole field of medicine. It need only be said of the clinical evidence reported so enthusiastically by Ferguson and his followers that it is uniformly uncontrolled. The simple and necessary expedient of retaining in each case a group of control patients similarly afflicted was apparently not used by any of the authors. In not a few of the cases, other treatment was used about the same time. Occasionally this was even specific or nonspecific protein therapy;[26] in others, the results reported, while apparently good, are no better than often occur with other treatments or even spontaneously. It is therefore quite impossible to judge whether or not the intravenous hydrochloric acid was responsible for the claimed clinical improvements.

CONCLUSIONS

It may be concluded that:

1. The hydrochloric acid solution recommended for intravenous use is described in such terms that it may be of indefinite and variable composition.

2. In commercial specimens of the acid sold for this purpose by one firm, the acid content is too low to have any significant effect on acid-base equilibrium but it is present in concentration possibly sufficient to reinforce the hemolytic tendency of the distilled water in which it is dissolved.

3. Any alleged therapeutic effect in all likelihood is produced by alteration in blood colloids, such as hemolysis.

4. It has not been demonstrated beyond reasonable doubt that an appreciable leukocytosis is produced by such injections.

5. The reputed causative relationship of the alleged leukocytosis to clinical improvement is derived entirely from so-called *post hoc* reasoning and remains unproved.

6. Adequately controlled evidence of clinical benefit from such treatment is completely lacking.

25. Hunt, Reid; McCann, W. S.; Rowntree, L. G.; Voegtlin, Carl, and Eggleston, Cary: The Status of Intravenous Therapy, J. A. M. A. **88**: 1798 (June 4) 1927.

26. Salter, W. M.: Am. Med. **25**: 386 (June) 1930. Howell, W. I.: Clin. Med. & Surg. **39**: 683 (Sept.) 1932.

Council on Pharmacy and Chemistry

NEW AND NONOFFICIAL REMEDIES

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION.

PAUL NICHOLAS LEECH, Secretary.

TYPHOID VACCINE (See New and Nonofficial Remedies, 1933, p. 391).

The National Drug Co., Philadelphia.

Typhoid Vaccine. (See New and Nonofficial Remedies, 1933, p. 394). Also marketed in three vial packages (one immunization), the first dose containing 750 million killed typhoid bacilli and the second and third doses containing, respectively, 1,500 million killed typhoid bacilli.

Typhoid-Paratyphoid Combined Vaccine. (See New and Nonofficial Remedies, 1933, p. 394). Also marketed in packages of thirty vials (ten immunizations), being ten sets of three doses, the first dose containing 500 million killed typhoid bacilli and 250 million each of killed paratyphoid A and B bacilli, the second and third doses containing, respectively, twice the number of bacilli in the first dose; in packages of 150 vials (fifty immunizations), being fifty sets of three doses, the first dose containing 500 million killed typhoid bacilli and 250 million each of killed paratyphoid A and B bacilli, the second and third doses containing, respectively, twice the number of bacilli in the first dose.

ANTIRABIC VACCINE (See New and Nonofficial Remedies, 1933, p. 371).

The Gilliland Laboratories, Inc., Marietta, Pa.

Rabies Vaccine-Gilliland (Semple Method).—(See New and Nonofficial Remedies, 1933, p. 372).—Also marketed in packages of fourteen vials, each containing 2 cc. The content of a vial is administered daily over a period of fourteen days.

VENTRICULIN (New and Nonofficial Remedies, 1933, p. 264).

The following dosage form has been accepted:

Ventriculin, 500 Gm. Bottle.

COD LIVER OIL (See New and Nonofficial Remedies, 1933, p. 271).

Ucoline Standardized Cod Liver Oil.—Cod liver containing 0.5 per cent of a mixture of equal parts of oil of peppermint and oil of wintergreen as flavoring, and having a vitamin A potency of not less than 1,000 units (U. S. P. X) per gram and a vitamin D potency of not less than 333 units (A. D. M. A.) per gram.

Dosage.—For adults, 2 to 4 cc. (30 to 60 minims) three times a day; for children, 1 to 2 cc. (15 to 30 minims) three times a day.

Manufactured by the Ucoline Products Co., Chicago. No U. S. patent or trademark.

Ucoline standardized cod liver oil complies with the standards of the U. S. P. X. In addition it is required to have a content of fat-soluble vitamin A as determined by the method of the U. S. P. X of not less than 1,000 units per gram and an antirachitic potency, as determined by the method of the American Drug Manufacturers Association, of not less than 333 vitamin D units per gram.

DEXTROSE (See New and Nonofficial Remedies, 1933, p. 267).

The following dosage forms have been accepted:

Ampoule Sterile Solution Dextrose, U. S. P., 50 Gm., 100 cc.: Each ampule contains dextrose, U. S. P., 50 Gm., in distilled water to make 100 cc.

Prepared by the E. S. Miller Laboratories, Inc., Los Angeles.

Ampoule-Vial Sterile Solution Dextrose, U. S. P., 10 Gm., 20 cc.: Each rubber-capped vial contains dextrose, U. S. P., 10 Gm., in distilled water to make 20 cc.

Prepared by the E. S. Miller Laboratories, Inc., Los Angeles.

Ampoule-Vial Sterile Solution Dextrose, U. S. P., 25 Gm., 50 cc.: Each rubber-capped vial contains dextrose, U. S. P., 25 Gm., in distilled water to make 50 cc.

Prepared by the E. S. Miller Laboratories, Inc., Los Angeles.

Ampoule-Vial Sterile Solution Dextrose, U. S. P., 50 Gm., 100 cc.: Each rubber-capped vial contains dextrose, U. S. P., 50 Gm., in distilled water to make 100 cc.

Prepared by the E. S. Miller Laboratories, Inc., Los Angeles.

EUCATROPINE (See New and Nonofficial Remedies, 1933, p. 84).

Euphthalmine Hydrochloride.—A brand of eucatropine-N. N. R.

Manufactured by Schering-Kahlbaum A. G., Berlin, Germany (Schering & Glatz, Inc., New York, distributor). U. S. patent 663,754 (expired). U. S. trademark 33,541.

TABLETS COD LIVER OIL CONCENTRATE-LEDERLE.—A cod liver oil concentrate in the form of sugar-coated tablets, each containing not less than 1,000 U. S. P. units of vitamin A and not less than 500 A. D. M. A. units of vitamin D. This is equivalent in vitamin A potency to at least one-half teaspoonful, and in vitamin D potency, to at least one teaspoonful, of a cod liver oil containing at least 400 U. S. P. units of vitamin A per gram and 133 A. D. M. A. units of vitamin D per gram.

Actions and Uses.—Tablets cod liver oil concentrate-Lederle possess properties similar to those of cod liver oil so far as these depend on the fat soluble vitamin content of the latter.

Dosage.—The dosage should be regulated according to the needs of the individual patient. The usual dosage for adults is two to three tablets after meals; for children, one to two tablets after meals.

Manufactured by the Lederle Laboratories, Inc., Pearl River, New York. No U. S. patent or trademark.

The basic concentrate is obtained from cod liver oil by concentration of the unsaponifiable fraction of the latter. Each batch is assayed by the U. S. P. method (weight and xerophthalmia) for its vitamin A content, and by the A. D. M. A. method for its vitamin D content. Biologic assays are repeated on the finished tablets.

***tri*ETHANOLAMINE-CRUDE.**—A mixture containing approximately 75 per cent triethanolamine, $(C_2H_4OH)_3N$, 20 per cent diethanolamine, $(C_2H_4OH)_2NH$, and 5 per cent monoethanolamine, $C_2H_4OH\ NH_2$.

Actions and Uses.—Triethanolamine-crude is an excellent emulsifying agent for use in the preparation of ointments and other dermatologic medicaments. When added to certain preparations used on the scalp, for example, oil of cade, it facilitates their subsequent removal. Triethanolamine-crude combines with fatty acids to form soaps with good detergent properties, which are soluble not only in water but also in gasoline, kerosene and oils. It is claimed to have the power of increasing the penetration of oily substances and to possess a certain amount of bacteriostatic action.

Dosage.—In the preparation of emulsions, the fatty acids are dissolved in oil, and the triethanolamine-crude in water, after which the two solutions are mixed. Emulsions are made in concentrations of from 20 to 40 per cent, which may be diluted subsequently. For emulsions containing olive oil, the proportions are 2 per cent triethanolamine-crude to 15 per cent oleic acid. The same proportions are used for the majority of vegetable oil emulsions. For mineral oils, less fatty acid is required.

Triethanolamine-crude is a colorless to pale yellow, viscous, hygroscopic liquid, with a slight ammoniacal odor. It is miscible with water and alcohol and is soluble in chloroform; immiscible with ether, benzene and purified petroleum benzin. The specific gravity is from 1.115 to 1.124 at 25 C. The refractive index is from 1.480 to 1.485 at 20 C.

To 1 cc. of triethanolamine-crude add 0.1 cc. of copper sulphate solution: a deep blue color forms. Add 5 cc. sodium hydroxide solution and concentrate to ½ volume by boiling: the color remains. To 1 cc. of triethanolamine-crude add 0.3 cc. of cobalt chloride solution: a carmine red solution forms. In a test tube place 1 cc. of triethanolamine-crude, and by means of a slotted cork suspend a piece of moistened red litmus paper in the air space, slot the side of the cork to let air escape, and place the tube in the steam-bath: the paper turns blue. To 2 cc. of a 2 per cent aqueous solution of triethanolamine-crude, add 2 drops of phenolphthalein indicator solution: an alkaline reaction is indicated.

Transfer 50 cc. of triethanolamine-crude, accurately weighed, to a suitable Ladenburg distilling flask; attach the flask to a suitable condenser with receiver and slowly and carefully fractionate at a pressure of 10 mm. of mercury, not more than 8 per cent by weight of distillate is obtained below 89 C., of which 1 Gm. consumes not more than 15.4 cc. nor less than 14.3 cc. of normal hydrochloric acid when titrated as indicated for triethanolamine-crude; not more than 3 per cent by weight of residue is left after distillation below 209 C.

Transfer 2 to 3 Gm. of triethanolamine-crude, accurately weighed, to an erlenmeyer flask. Add 75 cc. of water and 0.1 cc. of methyl red indicator solution, and titrate with normal hydrochloric acid: not less than 6.7 cc., nor more than 7.8 cc. of normal hydrochloric acid is consumed per gram.

The weight of the ash obtained from 1 Gm. of triethanolamine-crude, accurately weighed, is not more than 0.0001 Gm.

Transfer about 1.5 Gm., accurately weighed, of triethanolamine-crude to a 100 cc. beaker, add 50 cc. of solution A (dehydrated alcohol saturated with triethanolamine hydrochloride) and agitate the contents until the sample is dissolved. Add 10 cc. of solution B (100 cc. of solution A treated with dry hydrogen chloride until the weight increases 20 Gm.). Stir the contents well and set the mixture aside five minutes. Filter the solution through a prepared gooch crucible and complete transfer of the precipitate by washing with five to ten 1 cc. portions of solution A, then cover the precipitate by adding slowly 40 cc. of solution A, at the same time applying gentle suction to the crucible. Follow by washing with five 10 cc. portions of solution C (a mixture of 6 volumes of anhydrous ethyl ether and 4 volumes of dehydrated alcohol saturated with triethanolamine hydrochloride). Finally remove all liquid by suction, allow air to be drawn through the crucible for several minutes and dry to constant weight at 105 C. The weight of triethanolamine calculated from the weight of triethanolamine hydrochloride precipitate obtained is not less than 75 per cent of the weight of the sample.

Committee on Foods

THE COMMITTEE HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORT. RAYMOND HERTWIG, Secretary.

NOT ACCEPTABLE

BALDINGER'S RAZAVA BREAD

(VALUABLE IN THE TREATMENT OF DIABETES, OBESITY AND CONSTIPATION)

H. Baldinger and Company, St. Paul, submitted to the Committee on Foods a bread called Baldinger's Razava Bread, prepared from rye bran, shortening, salt and water without the use of any special leavening agent.

Analysis (submitted by manufacturer).—

	per cent
Moisture	56.9
Ash	1.9
Fat (ether extraction method)	1.8
Protein (N × 6.25)	7.0
Starch (diastase method)	8.1
Crude fiber	2.6
Carbohydrates other than crude fiber (by difference)	29.8

Discussion of Label and Advertising.—The first label submitted bore the statement "Valuable in the treatment of diabetes, obesity and constipation . . . for diabetes and indigestion" and a number of testimonials of physicians recommending the bread for diabetes, dyspepsia and constipation. The company was advised that a label of this character was not compatible with the requirements of the Committee, whereupon proof for a revised label carrying the following statements was submitted:

"Diabetics, under the care of a physician, will find that they can make provision for 2 or 3 slices of Razava Rye Bran Bread at every meal. . . . You can eat 5 slices of Razava to 1 slice of any other bread if you wish to avoid fat-producing foods."

It is not known whether this proposed new label was ever adopted, as the company has not replied to requests for information.

An advertising leaflet, "Eat Baldinger's Razava Bread," states:

"In the treatment of diabetes . . . The patient's whole difficulty lies in the fact that he cannot eat sugars and starches. For that reason the doctor prescribes . . . very little or none of the foods that have a large amount of starch. These are mainly foods that contain wheat flour and potatoes. . . . If the individual with diabetes must eliminate starches from his diet, then the difference must be made up by eating more proteins and fat, in order to satisfy his food requirement. Razava Bread and Razava Toast are particularly rich in these substances. . . . Doctors prescribe at least two to three slices with each meal. . . . Helps to reduce sugar. . . . Several very good reasons why Baldinger's Razava Bread is truly a health builder and an excellent tonic for diabetes and constipation . . . Baldinger's 'Razava' Diabetic Bread is rich in natural extract of free-nitrogen, protein and fat . . . contains practically every element of nutrition and highest form of nourishment the body needs in approximately right proportions. It has a tendency to regulate both Stomach and Intestinal digestion, and therefore aids in the digestion of other foods . . . puts back into the diet the things that modern milling methods have taken out . . . is a natural food and produces a natural result. Purifies the blood . . . is recommended and used by physicians and hospitals for diabetes . . . is remedial and is in the highest sense a Diabetic Food."

The advertising states or implies that this bread is a specific cure for diabetes, indigestion and dyspepsia. Many of the claims are incorrect and misleading. Persons with diabetes can eat sugars and starches within their tolerances. Wheat flour and potatoes are not the "main foods" high in carbohydrate. The diabetic patient who "must eliminate starches" is not helped by the replacement of all starches or carbohydrates by proteins. Metabolized proteins may yield as high as 58 per cent carbohydrate in the form of dextrose. The claim that Razava Bread is "particularly rich" in fat and protein (which it is not) does not recommend the food for diabetic patients. Doctors in general do not prescribe "two or three slices" of Razava Bread "with each meal." The bread does not reduce sugar in the blood and is not a "health builder" or an "excellent tonic" for diabetes. The claim that "Razava Bread is rich in natural extract of free-nitrogen" is meaningless. The allegation "contains practically every element of nutrition and highest form of nourishment . . . in approximately right proportions" is absurd and false. It does not "regulate stomach

and intestinal digestion," "aid in the digestion of other foods" or "put back into the diet the things that modern milling methods have taken out." A nutritionally important part of the wheat, the embryo, is not a component of Razava Bread. The statements "a natural food and produces a natural result" and "purifies the blood" are misleading vagaries, borrowed from quackery nostrum advertising. The product is not "truly a muscle builder." Allegations that the bread is "used by physicians and hospitals for diabetes" implies specific curative values not possessed. The bread is not "remedial" or "in the highest sense a diabetic food." The designation of a food as a diabetic food merely because it is low in carbohydrates is unwarranted and misleading and gives the erroneous impression that the food taken by diabetic patients in unrestricted quantities is harmless or that it has remedial action.

The advertising represents an attempt to exploit the diabetic or the dyspeptic patient by misinforming him of the true values of the bread or the proper treatment of these pathologic conditions. It promotes self diagnosis and self treatment by the sick who should be under the care of the physician. Advertising is incapable of prescribing the diet or treatment of the sick. Advertising of this character is a menace to public health.

The manufacturer was advised of the Committee's report but has ignored its recommendations and criticisms for correcting the advertising and labels. This product will therefore not be listed among the Committee's accepted foods.

ACCEPTED FOODS

THE FOLLOWING PRODUCTS HAVE BEEN ACCEPTED BY THE COMMITTEE ON FOODS OF THE AMERICAN MEDICAL ASSOCIATION FOLLOWING ANY NECESSARY CORRECTIONS OF THE LABELS AND ADVERTISING TO CONFORM TO THE RULES AND REGULATIONS. THESE PRODUCTS ARE APPROVED FOR ADVERTISING IN THE PUBLICATIONS OF THE AMERICAN MEDICAL ASSOCIATION, AND FOR GENERAL PROMULGATION TO THE PUBLIC. THEY WILL BE INCLUDED IN THE BOOK OF ACCEPTED FOODS TO BE PUBLISHED BY THE AMERICAN MEDICAL ASSOCIATION. RAYMOND HERTWIG, Secretary.

CERTIFOODS CERTIFIED NURSERY FOODS—CARROTS (SIEVED)

VITAMIN CONTENT GUARANTEED; NO ADDED SEASONING OR SUGAR

Distributor.—Certifoods, Inc., New York, a subsidiary of the Maltine Company, New York.

Packer.—Curtice Brothers Co., Rochester, N. Y.

Description.—Sieved carrots prepared by methods efficient for retention in high degree of the natural mineral and vitamin values; no added seasoning or sugar.

Manufacture.—Fresh carrots are washed, blanched, mechanically peeled, inspected, trimmed by hand, again washed, diced, cooked with a small quantity of water in an atmosphere of live steam at 116 C., sieved in an atmosphere of nitrogen gas, canned, processed and packed as described for Certifoods Certified Nursery Foods—Green Beans (THE JOURNAL, Oct. 3, 1931, p. 1003). The processing is for forty minutes at 116 C.

An alternative is the use of carrots that have been previously diced, packed solid in No. 10 tins, covered with water, exhausted at 71 C., sealed and processed at 116 C. for fifty-five minutes. The canned carrots before sieving are heated to 82 C., sieved in an atmosphere of nitrogen gas, and subsequently treated as described above.

Analysis (submitted by manufacturer).—

	per cent
Moisture	92.6
Total solids	7.4
Ash	0.5
Fat (ether extract)	0.1
Protein (N × 6.25)	0.6
Reducing sugars before inversion as dextrose	1.7
Reducing sugars after inversion as dextrose	3.7
Sucrose (copper reduction method)	2.1
Crude fiber	0.6
Carbohydrates other than crude fiber (by difference)	5.6
Calcium (Ca)	0.03
Phosphorus (P)	0.03
Iron (Fe)	0.0026

Calories.—0.3 per gram; 9 per ounce.

Vitamins.—The methods of preparation, sieving and processing are efficient to conserve the natural vitamins in high degree. The product is guaranteed to contain 350 units of vitamin A (Sherman method), approximately 1 unit of vitamin B (Chase and Sherman method) and 3 units of vitamin G (Bourquin and Sherman method) per ounce.

Claims of Manufacturer.—See this section for Certifoods Certified Nursery Foods—Green Beans (THE JOURNAL, Oct. 3, 1931, p. 1003).

VAN CAMP'S PURÉED MIXED VEGETABLES WITH CEREAL AND BEEF BROTH

(ADDED SALT)

Manufacturer.—Van Camp's, Inc., Indianapolis.

Description.—Blend of sieved carrots, peas, spinach, celery, potatoes, lima beans and tomato juice, with beef broth, rice and barley flours; slightly seasoned with salt; largely retains the natural minerals and vitamins.

Manufacture.—Good quality carrots and potatoes are washed, peeled, finely cut and sieved in a steam atmosphere through a screen with openings of a size to produce the desired fineness and texture. Medium size canned peas and small green canned lima beans are similarly sieved. Fresh spinach, whenever available, is inspected, trimmed, washed, cut and sieved. If fresh spinach of high quality is not available, Van Camp's Puréed Spinach is used. Celery stalks are cleaned and ground to medium fineness. The tomato juice is prepared to retain largely its natural vitamin content (Van Camp's Tomato Juice, THE JOURNAL, Nov. 28, 1931, p. 1627). The beef broth per pint contains approximately the meat extractives from a pound of lean beef and a portion of bone. The beef broth, vegetables, barley and rice flours, and salt in definite proportions are thoroughly mixed, heated and filled into enamel lined cans, which are sealed and processed.

Analysis (submitted by manufacturer).—

	per cent
Moisture	85.0
Total solids	15.0
Ash	1.4
Sodium chloride	0.8
Fat (ether extract)	0.1
Protein (N × 6.25)	3.0
Reducing sugars as dextrose	1.0
Sucrose (copper reduction method)	0.5
Crude fiber	0.4
Carbohydrates other than crude fiber (by difference)	10.0
Alkalinity of ash (cc. of normal acid per gram ash)	1.8
PH	5.7

Calories.—0.5 per gram; 14 per ounce.

Claims of Manufacturer.—An easily digestible food for supplementing the infant milk diet; has a smooth consistency, and supplies bulk without roughness.

BEECH-NUT STRAINED PEAS

(SLIGHTLY SEASONED WITH SALT)

Manufacturer.—Beech-Nut Packing Company, Canajoharie, N. Y.

Description.—Sieved peas retaining in high degree the natural vitamin and mineral values; slightly seasoned with salt.

Manufacture.—Illinois and Wisconsin peas are mechanically separated from the pods, cleaned, passed through a tank of cold water to float out any foreign matter, graded by machine, blanched in hot water at a minimum of time and temperature to prevent any significant leaching out of nutrients, inspected, canned, covered with hot brine, cooked in retorts, cooled and stored. The canned peas are strained, processed and packed as described for Beech-Nut Strained Carrots (THE JOURNAL, Nov. 11, 1933, p. 1562).

Analysis (submitted by manufacturer).—

	per cent
Moisture	86.1
Total solids	13.9
Ash	0.8
Sodium chloride	0.5
Fat (ether extract)	0.3
Protein (N × 6.25)	3.5
Crude fiber	1.0
Carbohydrates other than crude fiber (by difference)	8.3

Calories.—0.5 per gram; 14 per ounce.

Vitamins and Claims of Manufacturer.—See these sections for Beech-Nut Strained Carrots (THE JOURNAL, Nov. 11, 1933, p. 1562).

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SATURDAY, FEBRUARY 17, 1934

MENTAL EFFORT AND METABOLISM

In the Science of Nutrition, Graham Lusk stated that the source of mechanical work must be the metabolism, for mechanical energy cannot be derived from nothing. The necessary energy might be obtained in one of two ways: either at the expense of a proportionate reduction in the quantity of heat liberated by the resting organism or by an increase in the amount of the metabolism. In the former case, work would diminish the heat production and might cool the tissues, which is not observed to take place. If work were done at the expense of increased metabolism, and if this increase were completely converted into mechanical effect, the heat production in the organism might remain the same as in the resting state. If, however, the result of mechanical effort should be a stimulation of metabolism to the extent of not only enabling the body to do work but also causing it to produce more heat than when at rest, the tendency of the tissues would be to grow warmer, perhaps with a resulting outbreak of sweat to reduce the body temperature through physical regulation. The last named is the actual process.

The fact that under conditions of muscular exercise an augmented metabolism ensues is consonant with the early discovery of Lavoisier indicating an increased uptake of oxygen when work is done. What is to be said about the effects of mental effort? The influence of heightened mental activity on metabolism has long been debated. Muscular contraction, the fundamental feature of mechanical work by the organism, is attended with evidences of chemical changes. The output of carbon dioxide is increased; the intake of oxygen must sooner or later be augmented; heat production is an inevitable by-product. For many years it was impossible to demonstrate conclusively that such metabolic alterations attend the function of at least certain parts of the nervous system. With the development of more delicate methods of measurement, however, evidences of small changes indicative of metabolism seemed to be obtainable when peripheral nerves were provoked to manifest their characteristic functions. The nervous structures constitute only a small part of the "active" tissues of the body; hence it is quite conceivable that relatively small chemical transformations would escape detection in estimations of the metabolism of the body as a whole.

The situation is well summarized in studies of the Benedicts[1] in the Boston Nutrition Laboratory of the Carnegie Institution of Washington on the metabolism during special types of mental effort by university trained subjects. The mental effort, continued for four consecutive fifteen minute periods, consisted chiefly in the multiplication of pairs of two digit figures. Before and following the mental effort, metabolism measurements were made with the subjects in complete mental repose or during "attention," the attention consisting of closing an electric contact whenever a white or a red light appeared in the field of vision. The metabolism was the same during repose and attention. Sustained, intense mental effort for one hour caused an increase in heart rate, a hardly measurable increase in respiration rate, a marked alteration in the character of the respiration, a considerable increase in the apparent total ventilation of the lungs, a small increase in the carbon dioxide exhalation, a smaller increase (on the average, 4 per cent) in the oxygen consumption and the heat production, and a slight increase in the apparent respiratory quotient. In the repose periods following mental effort all the factors measured, except in a few instances of physical discomfort or fatigue, were lower than during mental effort and tended to return to the original levels prevailing before the mental effort. The results of the second mental effort series on the same experimental day duplicated for the most part those of the first. There was no indication of a summation effect or of a greater increase in the second series. Furthermore, during the progress of the four consecutive fifteen minute periods of mental effort there was no evidence of any greater effect on the factors measured in the later periods. Skin temperature measurements on the forehead indicated that there was no appreciable alteration in the blood supply to the skin of the head. No change in the insensible perspiration during mental effort was noted. According to the Boston physiologists the small increases in oxygen consumption and heat production are in large part to be accounted for by the increased muscular activity accompanying the increased ventilation of the lungs and the increased heart rate.

On the basis of all these carefully established observations, one may well agree with the conclusion reached by the Benedicts that mental effort per se is without significant influence on the energy metabolism. Mental achievement therefore need not be curtailed because of the high cost of living—at least so far as calories are concerned.

1. Benedict, F. G., and Benedict, Cornelia G.: Mental Effort in Relation to Gaseous Exchange, Heart Rate and Mechanics of Respiration, Publication 446, Carnegie Institution of Washington, 1933.

THE PROBLEM OF DENTAL CARIES

Progress in the preservation of health and in the repair of bodily defects has in many instances involved change from empirical makeshifts to scientifically established prophylactic and curative procedures. Such innovations have gradually been introduced into the practice of medicine. They are destined to become equally prominent in dentistry. Dental caries, commonly known as decay of the teeth, has been called "the most prevalent disease of mankind." Evidence of its early appearance has been found in Egyptian mummies. It has been pointed out [1] that, since there has not been any known means of preventing the disease, dentists during the past hundred years or so have been endeavoring to the best of their ability to preserve the teeth by filling the cavities as they appear and by restoring the lost dental tissues with artificial substitutes. Dental caries is unique as a disease in several respects. There is no other pathologic process that even remotely resembles it. Dental caries is not comparable to caries of the bone. It is not a true necrotic process nor is it attended by inflammatory reactions in the affected tissues. It is characterized by the formation of progressive lesions in the teeth, simple decalcifications by acids formed locally as a result of the fermentation of carbohydrates by certain aciduric types of bacteria.

The teeth are remarkable in having "outer fortifications"—the enamel—that act as a protective agency. Harm usually comes from the exterior. When the protective layer of enamel is broken or otherwise disintegrated, the less resistant dentin underneath falls an easier victim to disintegrating forces. One reason why the problem of tooth decay has been approached in the past mainly from the reparative standpoint is that the enamel in particular was not supposed to be penetrable by fluids, whereas other structures of the body are in some sort of physiologic communication with the blood and lymph. From the point of view of the supposed "static" character of the enamel it is not easy to assume that the latter can be readily affected by the nutritive processes. The nonvitalistic theory of the nature of enamel and dentin is not universally accepted. The existence of "lymph channels" making it possible for the supposedly permanent calcareous structures to be affected by the blood is maintained by some dental investigators. Disintegration of tissue is a characteristic of certain degenerative diseases; hence in earlier years dental caries was considered to be a necrotic process resulting from inflammatory processes in the tooth itself. With the development of dental histology it became evident, in the words of Bunting,[1] that the dentin and enamel contain no circulatory systems capable of inflammatory reaction. Still, the old humoralistic idea remains even today, in the form of a belief by many that the activity of dental caries is largely controlled by the hardness and softness of the teeth. The fact that clinical and experimental evidence has clearly shown that the activity of the disease is not necessarily related to the perfection of tooth structure, Bunting adds, seems not to have been universally grasped or its significance realized. The admonition "Feed your teeth" for the prevention of dental caries is still being heard; but the great majority of students in this field have agreed that the determinant causative factors in dental caries are not resident in the tooth itself.

In a review [2] of some of the modern aspects of tooth preservation, THE JOURNAL has pointed out that the results of studies on children are at least unanimous in showing that efforts to provide an improved diet are in the main rewarded with increased resistance to tooth decay. This in itself is cause for gratification and should be an incentive to further study. Whether the prophylactic substance is one of the vitamins or some other factor, either known or as yet unrecognized, or even a combination of these in optimal amounts, must await future research.

If it is true that the enamel is not in direct contact with the circulation or the immunologic as well as nutritive and reparative factors thus provided, there remains the intermediation of the secretions of the salivary or mucous glands. Admitting, for the purpose of argument, that acid produced locally on the teeth by certain bacteria is the fundamental cause of the caries, its effective development might be determined by at least three features. These are, first, the chemical constituents of the salivary and oral secretions; second, the possible immunologic principles of the saliva, and, third, the character of the retained food débris remaining about the teeth. According to the conclusions of laborious researches at the University of Michigan,[1] whatever controlling influence the saliva may have on dental caries is not by virtue of its total calcium, total phosphorus or p_H. Furthermore, in a correlated study of a small number of cases, no differences could be found in the total calcium, inorganic phosphorus, p_H or carbon dioxide combining power of the blood. These observations, Bunting insists, strongly negate the hypothesis that dental caries is the result of low calcium or low phosphorus content of either the blood or the saliva or is due to a condition of acidosis, statements frequently made but unsupported by adequate scientific evidence.

The Michigan studies have demonstrated anew the occurrence of carious and noncarious groups of persons. Corresponding with this is the discovery that, contrary to the widely accepted view, Bacillus acidophilus, the active causative agency in dental caries, does not inhabit all mouths alike. In some persons the organism is totally absent and, when implanted repeatedly, does not grow but promptly disappears. In others

1. Bunting, R. W.: Recent Developments in the Study of Dental Caries, Science **78**: 419 (Nov. 10) 1933. Many of the statements given above are taken from this paper.

2. Teeth and the Diet, editorial, J. A. M. A. **99**: 564 (Aug. 13) 1932.

it appears either intermittently or in small numbers. In persons in whom dental caries is active, as a rule, it grows luxuriantly and is constantly found on the teeth and in the saliva. Bunting reports that the intensive bacteriologic and clinical studies of thousands of cases over a period of five years by the University of Michigan group leave no room for reasonable doubt as to the specificity of Bacillus acidophilus as an active etiologic factor in dental caries. This view has been corroborated by the work of Rodriguez, Thompson and Enright. Acid fermentation and decalcification of teeth are thus firmly correlated. The amount and character of carbohydrate food débris in the mouth and about the teeth constitutes, therefore, an important factor in this dental disease. These studies are in harmony with prevalent expert opinion that the occurrence of dental caries is not determined by the structural quality of the tooth or by the degree of cleanliness of the mouth but that dental caries is definitely favored by certain phases of civilized life. There are other factors, such as hereditary constitution and general nutrition, that continue to deserve intensive research in relation to the welfare of the teeth. According to Bunting, at the present time the greatest promise for the ultimate solution of the problem seems to lie in the study of the chemistry of the saliva and its immunologic reactions against the organism of dental caries, and in a further study of diet in its relation to dental disease. To this end it is highly desirable that group studies be made in which the allied sciences of chemistry, nutrition, bacteriology and dentistry may be correlated in a truly scientific attack on this difficult and important problem in human welfare. It is only by studies of this broad nature, Bunting concludes, that any adequate concept of the nature of this disease or the means of its prevention may be attained.

ALPHA-DINITROPHENOL—A METABOLIC STIMULANT

A year has elapsed since alpha-dinitrophenol was introduced into therapeutics as a metabolic stimulant by Tainter and his collaborators of the Stanford University School of Medicine. In experimental animals, large doses of this chemical increase the metabolism as much as 1,200 per cent,[1] thus generating more heat than the animal can eliminate and resulting in fatal fever. Smaller doses increase the metabolism proportionately, without, however, any apparent deleterious effects on vital functions. Fat and carbohydrates are burned in about equal proportions with little if any effect on proteins. Particularly striking is a practically negligible effect on the circulation, in contrast to the pronounced effects on this function from equivalent doses of thyroid.

In patients, the drug stimulates metabolism similarly to the increases that occur in animals, with little or no symptoms following subfebrile doses.[2] This metabolic stimulation is useful in the treatment of obesity,[3] as shown by a fairly extensive series of cases. Particularly interesting is the fact that the drug appears to be effective regardless of the cause of the obesity, and even when the usual types of treatment are ineffective or inapplicable.[3] However, dinitrophenol cannot replace thyroid secretion when this is definitely lacking.

Considering the potency of the drug, few untoward results or accidents have been reported. One death has occurred, that of a physician who took a total of 9 Gm. in two doses, or about thirty ordinary daily doses.[4] His dying statements left no doubt that the drug was not taken for therapeutic purposes but probably with suicidal intent. The only definite side-action from the therapeutic use of the drug is a skin rash, which occurs in about one out of every fifteen cases.[3] The rash is uncomfortable for a few days and then disappears without sequelae. Even in the hands of a group that reported one case in which there was an unusually severe rash,[5] the drug caused loss of weight in thirteen other cases in accordance with the general experience. There have been no deleterious effects observed so far on the kidneys, but rather the contrary.[3] Likewise the liver appears not to be damaged.[3] True, one suspected case of liver injury has been reported,[6] but in this case the essential sign was a "jaundice," which, the physician failed to realize, might be only the color of the yellow dye he was administering. It is reassuring, therefore, that serious injury has not been demonstrated from therapeutic uses of this benzene derivative.

The introduction of dinitrophenol into therapeutics has aroused widespread interest in metabolic stimulants in general, and in substitutes for this drug, in particular. Already certain British workers[7] are proceeding to test the therapeutic actions of a related cresol. From the limited evidence available, the British drug appears to be more cumulative than dinitrophenol and not to be as well tolerated in high doses. Its general order of activity is not, however, greatly different. No information is at hand on the frequency of undesirable effects from this cresol, nor is its clinical toxicity or efficiency established. Therefore the dinitrocresol is still in the experimental stage and not ready for general therapeutic use. In contrast, the past year's experience with dinitrophenol has shown it apparently to be a

1. Cutting, W. C., and Tainter, M. L.: Proc. Soc. Exper. Biol. & Med. **29**: 1268 (June) 1932. Tainter, M. L.; Boyes, J. H., and DeEds, Floyd: Arch. internat. de pharm. et de therap. **45**: 235 (May) 1933. Tainter, M. L., and Cutting, W. C.: J. Pharmacol. & Exper. Therap. **48**: 410 (Aug.), **49**: 187 (Oct.) 1933. Hall, V. E.; Field, J.; Sahyun, M.; Cutting, W. C., and Tainter, M. L.: Am. J. Physiol. **106**: 432, 1933. Cutting, C. C., and Tainter, M. L.: Proc. Soc. Exper. Biol. & Med. **31**: 97, 1933.

2. Cutting, W. C.; Mehrtens, H. G., and Tainter, M. L.: Actions and Uses of Dinitrophenol, J. A. M. A. **101**: 193 (July 15) 1933.

3. Tainter, M. L.; Stockton, A. B., and Cutting, W. C.: Use of Dinitrophenol in Obesity and Related Conditions, J. A. M. A. **101**: 1472 (Nov. 4) 1933.

4. Geiger, J. C.: A Death from Alpha-Dinitrophenol Poisoning, J. A. M. A. **101**: 1333 (Oct. 21) 1933.

5. Anderson, H. H.; Reed, A. C., and Emerson, G. A.: Toxicity of Alpha-Dinitrophenol, J. A. M. A. **101**: 1053 (Sept. 30) 1933.

6. Haft, H. H.: Toxicity of Dinitrophenol, J. A. M. A. **101**: 1171 (Oct. 7) 1933.

7. Dodds, E. C., and Pope, W. J.: Lancet **2**: 352 (Aug. 12) 1933. Dodds, E. C., and Robertson, J. D., ibid. **2**: 1137 (Nov. 18), 1197 (Nov. 25) 1933.

relatively safe and reliable metabolic stimulant with which the practitioner may obtain therapeutic results. This does not mean that dinitrophenol should be given to every obese patient. In those cases in which diet has failed and thyroid is either not needed or not tolerated, dinitrophenol may be used with good prospects of benefit. However, as pointed out in the preliminary report of the Council on Pharmacy and Chemistry,[8] this agent must be used only under carefully controlled conditions and with due regard for the possibility that more extensive use may bring to light as yet unsuspected toxic effect. Particularly, patients should be cautioned of the dangers of overdosage; its indiscriminate use by the public will undoubtedly lead to serious accidents.

Current Comment

POTENT BACTERIA-FREE VACCINE VIRUS GROWN ON CHICK EMBRYO MEMBRANES

Goodpasture and his co-workers[1] in the Vanderbilt University Medical School have shown that vaccine virus can be grown on the chorio-allantoic membrane of the chick embryo. These results have been confirmed with dermal strains of vaccine.[2] It now appears that this method can be used for the production of vaccine virus on a large scale.[3] At present, vaccine virus is obtained from calves artificially inoculated on the skin of the abdomen, where the lesions of vaccinia or cowpox develop. The main objection to the calf virus is that it is not free from bacteria and other contaminants. In order to obtain absolutely pure virus, Goodpasture and Buddingh ground up embryo chick membranes, on which the virus was growing after inoculation with a dermal strain, and filtered the suspension through the Berkefeld N filter. The bacteria-free filtrate was centrifugated and the sediment inoculated on chick membranes, giving a pure strain of vaccine virus, which in fifteen months was carried through eighty-five successive generations in the chick without any intervening mammalian passage. This chick vaccine was found to have the same effects on rabbits and monkeys as the calf vaccine. In experiments on human beings with vaccine virus of the sixth and seventy-fifth chick membrane passage, after storage at 0 C. for five months and three months, respectively, typical vaccinia lesions developed in the regular manner, the lesions being on the whole milder than those of the control inoculations with commercial calf vaccine virus. Revaccinations with calf vaccine of the persons vaccinated with chick membrane virus and with the chick virus of the persons vaccinated with calf virus gave typical reactions of immunity in both groups. Further tests of the duration of immunity are under way. The advantages of the chick embryo vaccine virus over the calf virus appear to be the far greater ease of production and particularly freedom from contamination.

8. Alpha-Dinitrophenol: Preliminary Report of the Council on Pharmacy and Chemistry, J. A. M. A. **101**: 210 (July 15) 1933.

1. Goodpasture, E. W.; Woodruff, Alice M., and Buddingh, G. J.: Vaccinal Infection of the Chorio-Allantoic Membrane of the Chick Embryo, Am. J. Path. **8**: 271 (May) 1932.

2. Nauck, E. G., and Paschen, E.: Weitere Ergebnisse der Vakzinevirusrüchtung in der Gewebekultur, Zentralbl. f. Bakt. I, O. **128**: 171 (April 28) 1933. Stevenson, W. D. H., and Butler, G. G.: Dermal Strain of Vaccinia Virus Grown on Chorio-Allantoic Membrane of Chick Embryos: Possible Large Scale Production of Bacteria-Free Virus, Lancet **2**: 228 (July 29) 1933.

3. Goodpasture, E. W., and Buddingh, G. J.: Human Immunization with a Dermal Vaccine Cultivated on the Membranes of Chick Embryos, Science **78**: 484 (Nov. 24) 1933.

Association News

MEDICAL BROADCAST FOR THE WEEK

National Broadcasting Company

The American Medical Association broadcasts on a coast-to-coast network each Monday afternoon from 4 to 4:15, Central standard time (5 o'clock, Eastern standard time; 3 o'clock, Mountain standard time, and 2 o'clock, Pacific standard time). The subject for Monday, February 19, is "A Growing Menace." The speaker will be Dr. W. W. Bauer, director, Bureau of Health and Public Instruction.

Columbia Broadcasting System

The Association broadcasts on a western network of the Columbia Broadcasting System each Thursday afternoon on the Educational Forum from 4:30 to 4:45, Central standard time. The subject for Thursday, February 22, is "Some Popular Health Delusions." The speaker will be Dr. Bauer.

Radio Talk from Station WBBM

The Association broadcasts on Tuesday mornings from 8:55 to 9 o'clock, Central standard time, over Station WBBM (770 kilocycles, or 389.4 meters). The subject for Tuesday, February 20, is "Freak Accidents."

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

CALIFORNIA

Discussion of Amebiasis.—The San Francisco County Medical Society devoted its meeting, February 13, to a discussion of amebiasis. Speakers were Dr. Jacob C. Geiger, city health officer, on "Public Health Aspects of Amebiasis"; Dr. Alfred C. Reed, "Clinical Amebiasis," and Chauncey D. Leake, Ph.D., "Chemotherapy of Amebiasis."

Outbreak of Typhoid.—Fifty-one cases of typhoid with three fatalities were reported in a recent outbreak in Santa Barbara and vicinity. Most of the patients were hospitalized, but many have now been released from quarantine. Members of the state department of health and the U. S. Public Health Service assisted in the search for the source of the epidemic, which was not determined. No cases with date of onset later than December 7 have been reported.

Personal.—Dr. William F. Stein, Fresno, became health officer of Fresno County, January 16, succeeding Dr. James E. Pendergrass, Clovis.——Dr. Alfred C. Reed, professor of tropical medicine, University of California Medical School, San Francisco, has been appointed consultant in that specialty to the San Francisco Department of Health.——Dr. Ernest C. Foster has been appointed health officer of Kings County, succeeding Dr. Cecil G. Newbecker.——Dr. Palmer D. Miller has been named health officer of Dinuba, in Tulare County, to succeed Dr. Charles S. Mitchell.——Dr. James L. Faulkner, Red Bluff, has been appointed health officer of Tehama County, succeeding Dr. Ernest E. Thompson.

COLORADO

Annual Registration Due March 1.—All practitioners of medicine and surgery holding licenses to practice in Colorado are required by law to register annually before March 1, with the secretary-treasurer of the Board of Medical Examiners, and to pay a fee of $2, if a resident of Colorado, or $10, if a nonresident. Failure to pay this fee within the time stated automatically suspends the right of a licentiate to practice while delinquent. If he nevertheless continues to practice, he is subject to the penalties provided by law for practicing medicine without a license. Failure to pay this fee for three consecutive years results in the automatic cancellation of a delinquent practitioner's license to practice.

Institutional Advertising.—A resolution has been adopted by the board of councilors of the Colorado State Medical Society which states the attitude of the society toward members who are associated with institutions that advertise for or solicit the patronage of the public. It was pointed out that, while the society cannot maintain direct control of the hospitals and sanatoriums guilty of unethical advertising, this coming under the jurisdiction of the Colorado Hospital Association, it can exclude from membership those physicians who are affiliated with them. The resolution became effective on its publication in the February issue of *Colorado Medicine*. The Colorado Hospital Association, December 28, adopted a code of ethics to govern the practice of hospitals in relation to one another, advertising, rights of patients and public health programs. This code went into effect immediately.

DISTRICT OF COLUMBIA

Dr. Patterson Honored.—An honorary membership in the American Academy of Ophthalmology and Otolaryngology was presented to Major General Robert U. Patterson at the Army and Navy Club in Washington, Nov. 21, 1933. Dr. Burt R. Shurly, Detroit, was toastmaster at the banquet, and speakers, in addition to Dr. Patterson, included Surg. Gen. Perceval S. Rossiter, U. S. Navy, and Drs. Harris P. Mosher, Boston, and William Thornwall Davis. Dr. Patterson was presented with a silver platter.

Medical Bills in Congress.—S. 2006 has passed the Senate, authorizing the Commission on Licensure to Practice the Healing Art in the District of Columbia to license Della D. Ledendecker to practice chiropractic, notwithstanding the provision in the healing arts practice act requiring applications from candidates for licenses to practice chiropractic to be filed within ninety days from the date of the approval of the act, provided that Della D. Ledendecker shall otherwise be found by the commission to be qualified to practice under the provisions of the act.

Second Graduate Clinic.—The George Washington University School of Medicine will conduct its second annual graduate clinic, February 23-24. Sessions will be held in the Gallinger Municipal Hospital, University Hospital and the medical school. The program includes a symposium on jaundice by Drs. Charles S. White, Walter A. Bloedorn and Edward B. Vedder, and one on cystostomy and ureterography by Drs. Claude Moore, Lyle M. Mason, Miles P. Omohundro, Thomas C. Thompson and Gilbert Ottenberg. Under the classifications of demonstrations, ward rounds and clinics, the following subjects, among others, will be treated:

Psychological Factors in Disease, Dr. William A. White.
Leukemia: Endocrine Disorders, Dr. Stuart O. Foster.
New Growths of the Colon, Drs. Archibald L. Riddick and William W. Chase.
Surgery in Sterility of Women, Dr. Jacob Kotz.
The Present Status of Serum Therapy, Dr. George W. McCoy, director of National Institute of Health.
Amebic Dysentery, Drs. Vedder, Roger M. Choisser and Herman S. Hoffman.
Use of Galactose in Diabetic Patients, Joseph H. Roe, Sc.D., and Dr. John A. Reed.

GEORGIA

Prizes Awarded.—At the twenty-ninth annual meeting of the Fulton County Medical Society, January 4, the Dr. L. C. Fischer Awards for 1933 were presented. For the best original research, one prize went to Drs. James Fletcher Hanson, William K. Purks and Ruskin G. Anderson for "Electrocardiographic Studies of the Dying Human Heart." For their paper on "Congenital Heart Block," Drs. Launcelot Minor Blackford and Henry M. McGehee were awarded a second prize for the best written paper. These prizes have been offered for several years by Dr. Fischer to "stimulate original and research work." Papers must be presented before the society before being submitted for consideration in the contest.

ILLINOIS

Abortionist in Penitentiary.—Sherman T. Lewis, alias J. C. or J. G. Littlefield, formerly of Chicago, is now serving a sentence of fourteen years' imprisonment in the Illinois Penitentiary, Joliet, having been convicted of murder by abortion. Although a 1892 graduate of Northwestern University Medical School, Lewis was practicing without a license in Illinois. He was licensed in Wisconsin, but his license was revoked, April 17, 1928, following a conviction of manslaughter. He had been acquitted of a previous charge of manslaughter growing out of an alleged illegal operation, it was reported. He had also been licensed to practice in Nevada and Colorado.

Increase in Laboratory Tests.—There were 171,638 tests made for all diseases in the diagnostic laboratories of the state department of public health in 1933 as compared with 162,325 in 1932. Of these, 25,856 were positive in 1933 and 24,727 in 1932. The number of specimens examined for tuberculosis totaled 17,395 last year as compared with a previous figure of 15,033, and the proportion of positive tests increased from 15 to 17 per cent. More specimens were examined for diphtheria and typhoid in proportion to cases reported than ever before, but the percentage found positive was lower. Tests of animal heads for rabies went up from 505 in 1932 to 611 last year, and the proportions found positive were 35 and 45 per cent, respectively. Of the 99,352 specimens examined for syphilis, 17,630 were positive, an increase of 2,697 in the number of tests made for this disease.

Chicago

Society News.—Speakers before the Chicago Gynecological Society, February 16, were Drs. Henry Schmitz, on "Treatment of the Bleeding Uterus Due to Benign Lesions with Radium and Roentgen Rays"; William C. Danforth, Evanston, Ill., "Treatment of Fibroids; Report of a Series of 443 Cases," and David S. Hillis, "Fibroids in Pregnancy."——"The Emotional Difficulties of Unemployed Women" was the subject discussed at a meeting sponsored by the Illinois Society for Mental Hygiene, February 16, by Dr. David B. Rotman, Dr. Douglas G. Campbell and Ruth O. Potter, social worker. ——The Chicago Society of Allergy will be addressed, February 19, among others, by Dr. Milton B. Cohen, Cleveland, on "The Mechanism of the Asthmatic Attack in Allergic Asthma."——Dr. Hilmer William Elghammer will address the Chicago Pediatric Society, February 20, among others, on "Erythrocyte Sedimentation Rate in Rheumatic Infection."—— At a meeting of the Chicago Urological Society, February 21, the speakers will include Dr. John Talbot Gernon on "A New Antigen in the Treatment of Gonorrhea."

INDIANA

Society News.—At a meeting of the Floyd County Medical Society in New Albany, January 8, Dr. Harry E. Voyles spoke on "The Use of Insulin in the Nondiabetic, Malnourished Patient."——Dr. Thurman B. Rice, Indianapolis, discussed public health before the Adams County Medical Society in Decatur, January 12.——The Tippecanoe County Medical Society was addressed in Lafayette, January 12, by Drs. Oscar N. Torian and Joseph W. Ricketts, Indianapolis, on "Colds and Their Complications in Children" and "Amebic Dysentery," respectively.——Dr. James O. Beavis, Dayton, Ohio, discussed "Harelip and Cleft Palate" before the Wayne-Union Counties Medical Society in Richmond, January 11.——At a meeting of the Elkhart County Medical Society in Elkhart, January 4, Dr. Orus R. Yoder, Ypsilanti, spoke on "The Psychological Management of the Patient."——Dr. Ernest R. Carlo, Fort Wayne, addressed the Northeastern Indiana Academy of Medicine, January 25, on "Pneumonia in Children."——A medicolegal symposium constituted the meeting of the Indianapolis Medical Society, January 9, with Mr. Alfred E. Evans of the Indiana University School of Law discussing compensation laws and Mr. Albert Stump, expert testimony.

KENTUCKY

Society News.—A symposium on amebiasis will be presented before the Jefferson County Medical Society, Louisville, February 19, by Drs. Morris Flexner, Herbert H. Hagan and Harry S. Frazier. A discussion of public health plans and policies was presented at a meeting, February 5, by Drs. Arthur T. McCormick, Hugh R. Leavell and John D. Trawick, health commissioner of the state, city and county, respectively.

Bills Introduced.—S. 204 and H. 428 propose to reorganize the executive branches of the state government. Among other things, these bills propose to create a Department of Health to "exercise all administrative functions of the State

in relation to food and drug control, sanitation and vital statistics, the appointment and control of County Board of Health, the prevention and control of communicable diseases." The State Board of Health, the Board of Chiropractic Examiners, the Board of Dental Examiners, the Kentucky Pharmaceutical Association and the Board of Pharmacy are to "be deemed to be included within the Department of Public Health and constitute parts thereof, but each of said boards shall continue to exercise all the powers, rights and functions with relation to their respective . . . professions."

LOUISIANA

Personal.—Sir Aldo Castellani, director, Ross Institute of Tropical Hygiene, London School of Hygiene and Tropical Medicine, returned to New Orleans recently to begin his duties at Louisiana State University Medical Center as professor of tropical medicine; he will spend part of each year at the university.

Society News.—At a joint meeting of the staff of the Baptist Hospital and the New Orleans Gynecological and Obstetrical Society, November 28, with members of the Second District Medical Society as guests, the speakers included Drs. Henry B. Alsobrook on "Extra-Uterine Pregnancy Complicated by Intestinal Obstruction," and John T. Sanders, "Bicornuate Uterus with Twin Pregnancy."——The Fifth District Medical Society was addressed in Monroe, December 1, by Drs. Victor Carey on "Cultural, Spiritual and Material Medicine," and Fred Rankin, Lexington, Ky., "Diagnosis and Surgical Treatment of Cancer of the Colon and Rectum." Dr. Melville W. Hunter, Monroe, also spoke.——Speakers before the East and West Feliciana Bi-Parish Medical Society in Clinton in December were Drs. James M. Bamber, New Orleans, and Carl A. Weiss, Baton Rouge, on "Arteriosclerotic and Hypertensive Heart Diseases" and "Commoner Diseases of the Eye and Their Relation to General Systemic Diseases," respectively.

MAINE

Clinical Meeting.—The staff of the Eastern Maine General Hospital, Bangor, will present a clinical program for the Maine Medical Association, February 20-21, consisting of clinical case demonstrations, ward walks and surgical operations. There will be no papers. On the evening of February 20 the state association will meet jointly with the Penobscot County Medical Society.

Society News.—At a meeting of the Portland Medical Club, December 5, Dr. Arthur Paul Wakefield, Fairfield, spoke on "Public Health in China and the United States."——Speakers before the Kennebec County Medical Association at Augusta, December 21, were Drs. Samuel H. Kagan, Augusta, and John O. Piper, Waterville, on "Massage and Mobilization in the Treatment of Recent Injuries" and "Spontaneous Meningeal Hemorrhage," respectively.

MARYLAND

Society News.—Speakers before the Maryland Academy of Medicine and Surgery, recently, were Drs. Albert S. Hyman, New York, and Walter E. Dandy, Baltimore, on "Coronary Arterial Disease and Its Treatment" and "Lesions of the Cranial Nerves," respectively.——Justin M. Andrews, Sc.D., associate professor of protozoology, Johns Hopkins School of Hygiene and Public Health, addressed the Baltimore City Medical Society, January 5, among others, on "Epidemiology and Control of Amebiasis."——At a meeting of the Caroline County Medical Society, December 14, Dr. Henry V. Wilson, Jr., Dover, spoke on "Surgical Considerations of Gallbladder Disease."

DeLamar Lectures.—Warder C. Allee, Ph.D., professor of zoology, University of Chicago, opened the current series of DeLamar Lectures in Hygiene at Johns Hopkins University School of Hygiene and Public Health, December 19, with a talk on "Recent Studies in Experimental Populations." Speakers and their subjects comprising this series are as follows:

Dr. James Ewing, professor of oncology, Cornell University, The Prevention of Cancer, January 9.
Dr. Mark F. Boyd, field director, International Health Division, Rockefeller Foundation, and director, station for malaria research, Tallahassee, Fla., Research Opportunities Provided by Naturally Induced Malaria Therapy, January 16.
Dr. Walter S. Leathers, dean, Vanderbilt University School of Medicine, Nashville, Tenn., An Investigation of Hookworm Disease in a Southern State, January 31.
Dr. Lewis W. Hackett, assistant director, International Health Division, Rockefeller Foundation, New Light on the Epidemiology of Malaria, February 20.
Robert Spurr Weston, Boston, sanitary engineer, Recent Developments in the Art of Water Purification, March 6.
Dr. Earl B. McKinley, dean, George Washington University School of Medicine, Washington, D. C., Etiology of Leprosy, March 20.

MASSACHUSETTS

Dr. Washburn Becomes Commissioner of Institutions.—Dr. Frederic A. Washburn, who recently resigned as superintendent of the Massachusetts General Hospital, Boston, after holding the position since 1922, will become commissioner of institutions of Boston, effective March 1. He will have jurisdiction over the Hospital of the Chronic Sick and the Alms House at Long Island, child welfare, placing of children in foster homes, and the registration of the insane.

Memorial to Dr. Kline.—In tribute to the memory of Dr. George M. Kline, commissioner, Massachusetts State Department of Mental Diseases, from 1916 until his death last year, an oil portrait of him has been placed in the administration building of the new Metropolitan State Hospital, Waltham. In addition, the trustees of the hospital have named the assembly building in the new institution the Kline Memorial Hall, and an inscribed bronze tablet will be placed at the entrance to commemorate his services to the hospitals and schools of the department of mental diseases. An enlarged photograph of Dr. Kline has also been presented to each of the sixteen institutions of the department.

MICHIGAN

Personal.—Henry F. Vaughan, Detroit, Dr.P.H., was made an honorary member of the St. Louis Medical Society, December 19, at a meeting which he addressed on the Detroit plan. Dr. Vaughan is a native of Missouri.——Dr. Charles A. Neafie, formerly health officer of Pontiac, has been appointed medical director of Pontiac General Hospital.——Dr. Don W. Gudakunst, Detroit, was named president of the newly organized Michigan Association of School Physicians, Nov. 10, 1933.

Dr. Jennings Honored.—The Wayne County Medical Society will give a dinner, February 28, at the Book-Cadillac Hotel, Detroit, in honor of Dr. Charles G. Jennings, Detroit, who has completed more than fifty years in the practice of medicine. Dr. Walter R. Parker, Detroit, will be toastmaster, and Hon. James O. Murfin, former judge of the circuit court of Wayne County, will be a speaker. Dr. Jennings graduated from the Detroit Medical College in 1879. He was professor of medicine and chief of the department at his alma mater from 1897 to 1917. He was president of the American Pediatric Society in 1904 and of the American Therapeutic Society in 1922.

Plan for Medical Service for Unemployed.—Under a plan authorized by the Federal Emergency Relief Administration, a Medical-Dental Bureau has been established in the headquarters of the Wayne County Medical Society, which furnishes the services of physicians, dentists, pharmacists and nurses to unemployed welfare patients. William J. Burns, executive secretary of the Wayne County Medical Society, has been named head of the bureau. Cooperating agencies are the medical society, the Detroit District Dental Society, Detroit Nurses Association and the Detroit Pharmaceutical Association. Home and office care is provided for unemployed persons on welfare rolls but does not include hospitalization. A switchboard has been installed in the society's headquarters, and a clerical staff added to handle this service. According to the plan, the patient gets in touch with his family physician, who telephones the bureau for an authorization, which is given verbally and subsequently sent to him through the mail. All authorizations are limited to emergency service, the relief of pain and treatment of acute conditions.

MISSOURI

Clinics Award.—The St. Louis Clinics will offer an award of $100 and a certificate to the member of the St. Louis Medical Society presenting the best paper before the latter during the coming year. The competition opened January 1 for one year. The presentation will be made at the Clinical Conference of the St. Louis Clinics in 1935, which will probably take place in May.

Cancer "Specialists" Assessed Damages.—Two St. Louis physicians were ordered to pay damages of $6,500 in November as the result of a suit brought by the husband of a woman who died in 1931, following nine months' treatment with a so-called cancer paste, it is reported. Drs. Edward C. and John E. Westaver, father and son, graduated from the St. Louis College of Physicians and Surgeons in 1898 and 1918, respectively. This institution's charter was revoked in 1927 on a charge of being a diploma mill. The recent case was tried before a jury, which gave a unanimous verdict. The physicians promised a cure with their salves, charging $2 a treatment, it

was stated. Members of the state medical association testified that "the 'paste' was a futile effort to cure real cancer but might heal certain kinds of noncancerous tumors and sores."

Hodgen Memorial Unveiled.—A bronze plaque was unveiled in the building of the St. Louis Medical Society, January 9, as a memorial to Dr. John T. Hodgen. It is the work of Malvina Hoffman, sculptress, and is the gift of the St. Louis Surgical Society and the Medical Fund Society. The plaque was unveiled by Dr. Hodgen's grandson, Dr. John T. Hodgen of Grand Rapids, Mich., who is an honorary member of the surgical society. This ceremony followed the presentation of the annual Hodgen lecture by Dr. Walter B. Cannon, George Higginson professor of physiology, Harvard Medical School, Boston, on "Significance of the Emotional Level." The lecture is sponsored by the Surgical and the Medical Fund societies, which were established in 1891 and 1872, respectively. Dr. Hodgen died about fifty years ago.

NEW JERSEY

Bills Introduced.—S. 94, to amend the law providing liens in certain cases for hospitals, proposes to raise to 50 cents the fee required to be paid on filing a claim of lien. A. 115 proposes to authorize any judge, either on his own motion or on the motion of counsel, to appoint one or more expert witnesses, not exceeding three, to examine and investigate, and to testify relative to, matters as to which such expert evidence will be required. A. 125, to supplement the pharmacy practice act, proposes to authorize courts to issue injunctions to restrain the unlicensed practice of pharmacy. A. 126, to supplement the pharmacy practice act, proposes to provide for the suspension or revocation of a license to practice pharmacy if the holder has been convicted of a crime involving moral turpitude. A. 132 proposes that nothing in the state emergency relief act shall be construed to prohibit or limit any licensed physician, occupying a position as a state, county, municipal or school physician from being compensated by the state for the care and treatment of emergency relief patients.

NEW YORK

Bills Introduced.—S. 348 proposes to make it unlawful for any person to give any false police alarm or false call for a physician or hospital. S. 505, to amend the provisions of the medical practice act with respect to the licensing of physiotherapy technicians, proposes to permit any person engaged in the practice of physiotherapy prior to May 17, to be licensed, without examination, to practice physiotherapy, if he is a graduate of a legally chartered school or college of physical therapy. S. 514, to amend the law providing exemption from the payment of registration fees for hospital ambulances, proposes that such exemption shall extend only to ambulances used exclusively to carry sick or injured persons. A. 490 and A. 561 propose to create a board of barber examiners and to regulate the practice of barbering. A. 570, to amend the workmen's compensation act, proposes, in effect, to make compensable all occupational diseases arising out of any employment covered by the act.

New York City

Afternoon Lectures at the Academy.—Recent afternoon lectures in the series at the New York Academy of Medicine were:

Dr. Abernethy Benson Cannon, December 22, Early Diagnosis and Treatment of Syphilis.
Dr. Elwin Beer, January 5, Calculous Disease of the Urinary Tract.
Dr. Maximilian A. Ramirez, January 12, Newer Work in Allergy of Interest to the General Practitioner.
Dr. John H. Wyckoff, January 19, The Tachycardias: Diagnosis and Treatment.
Dr. George R. Minot, Boston, January 26, The Anemias—Etiology and Treatment.

Hospital Doubles Number of Patients.—The annual report of New York Hospital covering the year 1932, made public January 2, showed that the number of patients doubled after the hospital moved into its new quarters in September 1932. In that month the hospital had 5,901 pavilion patients and 663 private patients; in October the pavilion patients had increased to 12,118 and private patients to 1,372. Outpatients increased from 10,825 in September to 17,425 in December. The report stated that 38 per cent of the ward service and 39 per cent of the outpatient service were rendered free.

Health Report for 1933.—The lowest death rate in the history of New York, 10.23 per thousand of population, was reported by the department of health in its report for 1933. There were 75,153 deaths, of which the largest number, 18,667, were caused by diseases of the heart. Other important causes were: pneumonias, 7,679 deaths; cancer, 8,929; tuberculosis, 4,057; Bright's disease, 3,639; accidents, all forms, 4,234, and diabetes, 2,139. A new low death rate for tuberculosis was registered, 55.21 per hundred thousand; in 1928 this rate was 69.12. During the year there were only 1,895 cases and 85 deaths from diphtheria, a result attributed to the department's intensive campaign of immunization. There were 588 cases of typhoid with 70 deaths, most of which resulted from bathing in polluted waters or eating shellfish taken surreptitiously from forbidden areas. Automobile accidents caused 1,135 deaths, a record low rate of 15.45 per hundred thousand. Diabetes, with a rate of 29.1, showed a notable increase since 1928, when the rate was 24.8. The suicide record showed improvement with 1,325, or a rate of 18.04, as compared with 1,595, a rate of 22.1 for 1932. The infant mortality rate was 53.2 per thousand births, an increase over 1932, when the rate was 50.91. Maternal mortality was 6.41 per thousand live births, as compared with 6.09 in 1932 and 5.29 in 1928.

NORTH CAROLINA

Personal.—Dr. Crete N. Sisk, Henderson, has been appointed health officer of Vance County to succeed Dr. Clarence H. White, who resigned to spend a year at Harvard School of Public Health under a fellowship from the Rockefeller Foundation.

Society Establishes Award.—The Guilford County Medical Society at its December meeting in High Point voted to establish an annual award of a silver cup and a complimentary dinner to be given to the member who has produced during the year an exceptionally creditable piece of work related to the medical sciences. A committee was to be elected to select the recipient of the award. At this meeting Dr. Paul P. McCain, Sanatorium, addressed the society on early diagnosis of tuberculosis by the roentgen ray.

The Control of Psittacosis.—The state board of health, December 5, promulgated regulations governing methods of controlling psittacosis. It is ordered that cases of psittacosis must be reported within twenty-four hours and that patients must be isolated. Among other things, persons exposed to the disease should be kept in quarantine five days and under observation for three weeks. It is advised that all birds be regarded as potentially dangerous when they have been exposed and be kept under quarantine. Shipment of birds into the state must conform to federal regulations.

OKLAHOMA

Special Health Projects.—Three public health projects are now under way in Oklahoma under the auspices of the state health department in addition to its regular program of disease prevention. Under the direction of sanitary engineers, fifty-two drainage projects to eliminate breeding places of malaria mosquitoes are in progress, and others are being prepared. For this work 3,500 men are being furnished by the Civil Works Administration. One hundred and ninety community sanitation projects have been approved and about 1,600 men are employed on them. The third is a state-wide immunization campaign against diphtheria, typhoid and smallpox, in which the vaccines are furnished by the board to any physician in the state. It is estimated that about 200,000 children have been immunized against diphtheria. The number immunized against typhoid and smallpox will be smaller because of previous work in this field, according to Dr. George N. Bilby, Oklahoma City, state health officer.

Society News.—The Southeastern Oklahoma Medical Association met in Durant, December 14, with the following speakers, among others: Drs. Leonard S. Willour, McAlester, "Organized Medicine"; George W. West, Eufaula, "Defects in Medical Education," and Forrest P. Baker, Talihina, "Tuberculosis in Childhood."——Members of the staff of General State Hospital, Norman, addressed the Okmulgee County Medical Society, December 18, as follows: Drs. James J. Gable, on "Acute Neurasthenia"; Charles R. Rayburn, "Circulation of the Central System," and John L. Day, "Mental Hygiene."——Speakers at the meeting of the Southern Oklahoma Medical Association at Shawnee, December 5, were, among others, Louis A. Turley, Ph.D., Norman, "Pathology of Encephalitis"; Drs. John B. Morey, Ada, "Circulatory Diseases of the Extremities," and Carl T. Steen, Norman, "The Mental Hygiene Movement."——Dr. Floyd S. Newman, Shattuck, addressed the Woodward County Medical Society, Woodward, December 15, on blood transfusion.——Drs. Everett F. Jones and John R. Reagan, Wichita Falls, Texas, addressed the Jefferson County Medical Society, Waurika, December 4, on "Ten Years' Experience with Radium in Uterine Conditions" and "Electrical Treatments for Prostatic Conditions," respectively.

PENNSYLVANIA

Philadelphia

Students Want Health Service Abolished.—The *Daily Pennsylvanian*, student publication of the University of Pennsylvania, in a recent editorial recommended that the student health service of the university be abolished. The editorial stated, it is said, that the situation seems to be without remedy, that students cannot boycott the health service because the charge is prorated on their bills each semester no matter what their wishes. The charge to students is said to be $10 a year, $5 a semester.

Hospital News.—The Women's Homeopathic Hospital celebrated its fiftieth anniversary, October 27.——Dr. Morris B. Cooperman will give a public lecture at Mount Sinai Hospital, February 28, on "Backache and Flat Feet," one of a series of nine health talks.——Jefferson Hospital has become a member of the Circulating Picture Club of the Philadelphia Art Alliance. It is said to be the first institution of its kind to take advantage of the lending library of paintings to be hung in sickrooms and convalescent wards.

Personal.—Dr. Charles A. E. Codman was elected president of the Medical Club of Philadelphia, January 19.——Dr. and Mrs. John M. Barthmaier celebrated their fiftieth wedding anniversary, January 8.——Dr. Randle C. Rosenberger reports that a valuable Stradivarius violin has been stolen from his office at Jefferson Medical College.——Dr. Charles A. Moriarty has been appointed a coroner's physician.—— Dr. Morton McCutcheon was recently elected president of the Pathological Society of Philadelphia, and Herbert L. Ratcliffe, Sc.D., secretary.

TEXAS

Society News.—Dr. Claude C. Cody, Houston, was elected president of the Texas Ophthalmological and Otolaryngological Society at its annual meeting in Dallas, December 8-9, and Dr. Oscar M. Marchman, Dallas, secretary. Among speakers were Drs. Harry S. Gradle, Chicago, on "Evaluation of So-Called Ophthalmic Advances"; James B. Costen, St. Louis, "Conditions of the Jaw," and Lieut. Col. George R. Callender, Fort Sam Houston, "Malignant Tumors of the Eye." The next session will be held in San Antonio, in connection with the meeting of the Southern Medical Association.——Dr. Walter B. Reeves, Greenville, was elected president of the North Texas Medical Association at its semiannual meeting in Dallas, December 5-6. The June meeting will be held in Terrell.

Health at El Paso.—Telegraphic reports to the U. S. Department of Commerce from eighty-six cities with a total population of 37 million, for the week ended February 3, indicate that the highest mortality (21.5) appeared for El Paso, and the rate for the group of cities as a whole, 12.3. The mortality rate for El Paso for the corresponding period last year was 17.2, and for the group of cities, 12.1. The annual rate for eighty-six cities for the five weeks of 1934 was 12.5, as against a rate of 12.9 for the corresponding period of the previous year. Caution should be used in the interpretation of these weekly figures, as they fluctuate widely. The fact that some cities are hospital centers for large areas outside the city limits or that they have a large Negro population may tend to increase the death rate.

VIRGINIA

Bills Introduced.—H. 23, to amend the optometry practice act; if enacted, apparently would make it unlawful for physicians to prescribe lenses or ocular exercises for the correction or relief of any ocular refractive deficiency or deformity, or visual or muscular anomaly, of the human eye. A bill introduced in the House of Delegates, February 6, by Mr. Scott, and referred to the Committee on General Laws, proposes to amend the law making it unlawful for any tobacco manufacturer to employ opium, either in the tobacco used or in the paper wrappers of cigarets, by forbidding also the like use of marihuana, loco weed, or any other sedative, narcotic or hypnotic drug, like chemical or substance.

WEST VIRGINIA

Society News.—Dr. Cyrus C. Sturgis, Ann Arbor, Mich., addressed the Ohio County Medical Society, Wheeling, January 19, on "Diagnosis and Treatment of the Macrocytic Anemias." Dr. Porter P. Vinson, Rochester, Minn., addressed the society, January 5, on diagnosis and treatment of cardiospasm. ——Dr. Russell B. Bailey, Wheeling, addressed the Marshall County Medical Society, January 9, on cancer of the breast. ——Dr. William V. Wilkerson, Montgomery, addressed the Fayette County Medical Society, Oak Hill, December 12, on neurologic diagnosis.

Rural Sanitation Program.—Dr. Frederick T. Foard, Jr., of the U. S. Public Health Service, has been assigned temporarily to the West Virginia State Department of Health to assist in the organization and supervision of a state-wide rural sanitation program. The plan, which is being carried out by the health department in cooperation with the Public Health Service and the Civil Works Administration, has as its objective improvement of sanitary conditions in all farm homes and homes at mining camps. About 3,000 men are already at work and it is expected that about 8,000 will be employed on the project by March 15.

WISCONSIN

Personal.—Dr. George H. Conklin, Superior, has been selected as superintendent of the Douglas County tuberculosis sanatorium.——Dr. Harry Beckman, professor and director of the department of pharmacology, Marquette University School of Medicine, Milwaukee, has been appointed American collaborating editor of *Clinica y Laboratorio*, published in Zaragoza, Spain.

GENERAL

Radium Lost.—A package containing 50 mg. of radium in the form of four standard monel metal needles, each measuring about 27 by 1.75 mm. in diameter, was mailed to Dr. Donald D. Stoner, Flatonia, Texas, by Dr. Harold Swanberg, Quincy, Ill. Thus far, Dr. Swanberg reports, it has not been received by Dr. Stoner and has apparently been lost or stolen. The package was dispatched by special delivery insured mail.

Change in Status of Licensure.—The California State Board of Medical Examiners reports the following action taken at a meeting, Oct. 19, 1933:

Dr. George B. Dewees, Fresno, found guilty of habitual intemperance and placed on probation for five years; ordered to report at each San Francisco meeting and not to violate any laws.
Dr. Robert S. Friend, Long Beach, license revoked for narcotic violation.

The Florida State Board of Medical Examiners reports the following:

Dr. Vladimir K. Jindra, Miami, license revoked, Nov. 13, 1933, on the basis of several criminal charges, including a criminal operation in 1933, a felony in 1917, a narcotic violation in 1933, and a conviction of the crime and offense of culpable negligence, 1930.

Valley Meeting.—The thirty-ninth annual session of the Sioux Valley Medical Association convened in Sioux City, Iowa, January 23-24, under the presidency of Dr. Sidney A. Slater, Worthington, Minn. Papers were presented by the following physicians:

Alfred W. Adson, Rochester, Diagnosis and Treatment of Spinal Cord Tumors.
Austin C. Davis, Rochester, The Myxedema Problem.
Charles M. McKenna, Chicago, Significance of Blood and Pus in the Urine.
Philip C. Jeans, Iowa City, Certain Aspects of the Feeding Problem.
Owen H. Wangensteen, Minneapolis, Acute Bowel Obstruction.
Robert O. Schrock, Omaha, Fractures of the Tibia and Fibula.
Solon Marx White, Minneapolis, Nonpainful Features of Coronary Occlusion.
Frederick H. Falls, Chicago, Premature Detachment of the Placenta.

Numerous clinics were also included in the program.

Golden Jubilee of Annals of Surgery.—The fiftieth anniversary of the *Annals of Surgery* is commemorated with a special volume, containing an editorial tribute on Dr. Lewis Stephen Pilcher, Brooklyn, who has served continuously as editor. The *Annals of Surgery* is the outgrowth of the *Annals of the Anatomical and Surgical Society*, which was the transactions of the Brooklyn Anatomical and Surgical Society, established in 1878. The first volume bears the date 1878-1879, but in the following year it became the *Annals of Anatomy and Surgery*, a monthly periodical under Dr. Pilcher's editorship. This arrangement continued until 1884, when he went abroad for special study in surgery. After he returned, however, the publication was issued as the *Annals of Surgery*. Dr. Pilcher received his degree in medicine at the University of Michigan in 1866 and the degree of doctor of laws from the same institution in 1900. He was adjunct professor of anatomy at Long Island College from 1879 to 1883, and professor of surgery at New York Post-Graduate Medical School from 1885 to 1895. In 1892 he was president of the New York State Medical Society and of the Medical Society of the County of Kings in 1900. He was president of the American Surgical Association in 1918. He was a member of the Board of Medical Examiners of the State of New York from 1913 to 1928. He retired from the U. S. Navy in 1872, having served since 1867 as assistant surgeon.

Medical Bills in Congress.—*Change in Status:* H. R. 7527 has passed the Senate, making an additional appropriation for the continuation of the Civil Works program. As passed by the Senate, the bill provides, in part, that the United States Employees' Compensation Commission "is hereby authorized in its discretion to provide for the initial payments of compensation and the furnishing of immediate medical attention through the local authorities of the Civil Works Administration." *Bills Introduced:* S. 2476, introduced by Senator Capper, Kansas, proposes that for the purposes of promotion, longevity pay, and retirement there shall be credited to the officers of the Veterinary Corps, and former officers of the Veterinary Corps now on the retired list, all full time service rendered by them as veterinarians in the Quartermaster Department, Cavalry or Field Artillery. S. 2571, introduced by Senator Johnson, California, proposes to authorize the Secretary of the Interior to arrange with the several states for the education, medical attention, relief of distress, and social welfare of Indians. S. 2574, introduced by Senator Walsh, Massachusetts, proposes that all officers of the Dental Corps of the Navy who entered the service prior to July 1, 1918, and who had not on that date attained such minimum age as to provide for their eligibility for appointment to the Dental Corps of the Navy, and whose active service has been continuous, shall, for purposes of precedence, be credited with their total active commissioned service. S. 2602, introduced by Senator Lewis, Illinois, proposes to include the name of Gustaf E. Lambert among those honored by "An Act to recognize the high public service rendered by Major Walter Reed and those associated with him in the discovery of the cause and means of transmission of yellow fever." S. 2688, introduced by Senator Sheppard, Texas, proposes to validate payments heretofore made by disbursing officers of the Army for the medical and hospital treatment of members of the Reserve Officers' Training Corps and of the Citizens' Military Training Camps who contracted disease in line of duty while en route to or from and while at camps of instruction. H. R. 7259, introduced by Representative Celler, New York, proposes to confer additional benefits on veterans. Among other things, the bill provides that any World War veteran employed in the active military or naval service between April 6, 1917, and Nov. 11, 1918, not dishonorably discharged, in need of hospitalization or domiciliary care and unable to defray the necessary expenses thereafter, may be furnished the necessary hospitalization or domiciliary care in any Veterans' Administration facility, irrespective of whether the disability was due to service. A statement by the veteran that he is unable to defray the expenses necessary for hospitalization or domiciliary care must be accepted by the Administrator of Veterans' Affairs as conclusive evidence of that fact. H. R. 7262, introduced by Representative Gasque, South Carolina, and H. R. 7335, introduced by Representative Gillette, Iowa, propose to grant pensions and increases of pensions to certain soldiers, sailors and nurses of the war with Spain, the Philippine insurrection, or the China relief expedition, and their widows and dependents. H. R. 7313, introduced by Representative Mitchell, Tennessee, proposes to authorize the erection of a veterans' hospital in middle Tennessee. H. R. 7350, introduced by Representative Ludlow, Indiana, proposes to grant pensions and increases in pensions to certain soldiers and sailors of the war with Spain, the Philippine insurrection, or the China relief expedition, to certain maimed soldiers, to certain widows, minor children, and helpless children of such soldiers and sailors. H. R. 7802, introduced by Representative Black, New York, provides for the further development of vocational education in the several states and territories. H. R. 7804, introduced by Representative Cochran, Missouri, proposes to authorize the Reconstruction Finance Corporation to make loans to any public or private hospital organized under the laws of any state.

Deaths in Other Countries

Angel Brioso Vasconcelos, Mexico City, professor of hygiene, Military School of Medicine, 1923-1933; clinical professor of venerology, National School of Medicine, 1925-1927; for many years chief of the department of disinfection in public health service; editor of *Gaceta Medica*, 1919-1927; correspondent to THE JOURNAL, 1919-1925; member of many scientific societies, and author, recently, aged 50.——**Sir Donald Macalister,** since 1904 president, General Medical Council; chairman, British Pharmacopeia Committee, author; London, January 14, aged 79.——**Sir William Bate Hardy,** biologist and refrigeration expert; aged 69; died in Cambridge, January 23. Sir William delivered the Flexner Lectures at Vanderbilt University School of Medicine, Nashville, Tenn., in 1931.——**Dr. Bernard Hollander,** founder and president of the Ethological Society and past president of the Société Internationale de Philologie, Sciences et Beaux-Arts; editor of the *Ethological Journal*, and formerly clinical assistant to Professor Krafft-Ebing, Vienna, and author of numerous tracts on psychotherapy; aged 69, following an operation.

Government Services

Dr. Whitehead Named Director of Aeronautics

The appointment of Dr. Roy E. Whitehead, Indianapolis, as chief of the medical section of the aeronautics branch of the U. S. Department of Commerce, Washington, D. C., succeeding Dr. Eldridge S. Adams, resigned, has been announced. Dr. Whitehead, who is 40 years old, graduated from the Indiana University School of Medicine in 1920. He is also a graduate of the army school of aviation medicine and is at present the Indiana governor of the National Aeronautics Association.

Monthly Meetings of Naval Officers

Rear Admiral Perceval S. Rossiter, surgeon general of the U. S. Navy, has initiated monthly meetings for the medical officers living in and near the District of Columbia. At each meeting a subject of medicomilitary or scientific interest will be presented and a social hour will follow. At the first meeting, October 2, the surgeon general discussed current activities of the department and at the second, November 6, Dr. Victor G. Heiser of the Rockefeller Foundation spoke on "Medical Observations During the Past Year in Many Lands." Dr. Maurice C. Pincoffs, professor of medicine, University of Maryland, Baltimore, spoke, January 8, on "Clinical Aspects of Various Types of Respiratory Difficulty."

Federal Expenditures for Emergency Medical Relief

The Federal Emergency Relief Administration expended $3,291,970 for medical care throughout the country from July 1 to Nov. 30, 1933, according to a report issued January 27. Expenditures by months were as follows: July, $921,137; August, $989,489; September, $941,486; October, $911,666; November, $852,882. A table of amounts allocated to individual states for November shows that the largest amounts went to Indiana, which received $115,906.31; Illinois, $84,797; Wisconsin, $63,062.38; Massachusetts, $47,219.61, and New Jersey, $43,004.71. No funds were expended by Idaho, Michigan, Oklahoma, Texas or Wyoming. These figures do not include expenditures of the government for medical treatment for occupational injuries sustained by the 4,500,000 persons temporarily employed by the Civil Works Administration, who come within the scope of the Federal Employees Compensation Act.

Medical Center for U. S. Penal System

The opening of the U. S. Hospital for Defective Delinquents, Springfield, Mo., marks the completion of a program of prison improvement authorized by Congress in May 1930. The new hospital is considered an essential unit in the government's attempt to specialize the treatment of persons committed to its care. It will be used only for prisoners over whom the federal government has assumed jurisdiction. When the prisoner finishes his term he will be returned to the state of his domicile for further care and treatment. Said to be the only one of its kind in the world, the institution will serve as a medical center for the entire federal penal system. The first prisoners to be transferred will be a group of mental patients now cared for at St. Elizabeth's Hospital, Washington, D. C., and later the sick and insane prisoners now inadequately housed in federal prison hospitals. The institution will also care for prisoners who, during the time of their detention, become afflicted with an incurable or chronic degenerative disease, or become so defective mentally or physically as to require special medical care and treatment not available in an existing federal institution. The site, consisting of 445 acres donated by citizens of Springfield, was selected as the most suitable of about thirty sites offered. Besides being located centrally with reference to all the widely scattered institutions in the federal system, the hospital has a favorable climate because of its location in the Ozarks region and its elevation. Eight buildings have been erected thus far at a total cost of $2,040,983. The center will accommodate 705 patients and the average bed cost per patient will be about $2,900. Dr. Lawrence Kolb of the U. S. Public Health Service will be in charge. The hospital was formally dedicated September 22.

Report of Surgeon General of Navy

For the third year in succession, motor vehicle accidents were responsible for more deaths and noneffectiveness among the personnel of the United States Navy than any other group of hazards, being responsible for 70 deaths and 1,149 admissions to the sick list, according to the report of the surgeon general for the calendar year 1932. In 1932 only 34 deaths, including two suicides, were caused by drowning, which until 1930 was the leading cause of death in the navy. Of 371 deaths in the service, a decrease from 391 in 1931, 186 were caused by disease, 113 by accidental injuries and 3 by poisoning. There were 15 homicides and 19 suicides. Three war casualties were reported from the Marine Corps expeditionary forces in Nicaragua. Among diseases the leading causes of death were: diseases of the circulatory system, 35; pneumonia, 26; tuberculosis, 22; abscess, 10, appendicitis, 9, and influenza, 6. One death occurred from septicemic plague on a ship at Kuikiang, China, and one from smallpox in Shanghai. The hospital admission rate for 1932 was 554.06, as compared with 565.92 for 1931. Of 61,344 admissions, 30.81 per cent were for communicable diseases transmitted by oral and nasal discharges; 24.12 for venereal disease, and 10.84 for wounds and injuries. There were 18,902 admissions in the first class, of which 13,110 were classified as cases of acute catarrhal fever, a term used to include the common cold. In this type of infection there was a 25 per cent increase over 1931, but the entire group showed a lower incidence than for the previous year. Influenza accounted for 1,637 admissions, compared with 2,384 for 1931. A moderately severe epidemic occurred, however, in July 1932 in the forces afloat, which assumed such proportions that movement of ships, gunnery exercises and other fleet activities were affected. These so-called minor infections are of more importance from the standpoint of the health of the navy than diseases such as measles, scarlet fever and diphtheria, the report says. Mumps was less prevalent than for the preceding ten years, with 124 admissions, a rate of 112 per hundred thousand; the median rate for the preceding five years was 427. Scarlet fever was unusually low, with a rate of 33 per hundred thousand, as compared with 71 for 1931. The lowest admission rate since 1924 was reported for Vincent's angina, 543 per hundred thousand. Three cases of smallpox and three of acute anterior poliomyelitis were reported. Venereal disease was second in number of admissions, with 14,794, a slight reduction from the previous year. Wounds and injuries were third, with 6,588. The report noted 3,684 surgical operations. During the year 63,152 persons were cared for in naval hospitals with a total of 2,621,429 treatment days. Of the number treated, 37,504 were patients of the Veterans' Administration, 20,679 of the navy and 4,969 of supernumeraries. A total of 1,259 persons were invalided from the service during the year. In a report covering activities of the medical department for the fiscal year ended June 30, 1933, the surgeon general reports the closing of the Naval Hospital at Great Lakes, Ill., and the beginning of construction of a new hospital at Philadelphia in February 1933. The loss of the airship *Akron*, April 4, 1933, resulted in the death of sixteen officers, one warrant officer and fifty-five enlisted men. At the close of the fiscal year the force consisted of 891 medical officers, 192 dental officers, 140 warrant officers, 466 nurses and 3,794 hospital corpsmen. Two hundred and nine medical officers were on duty with the Civilian Conservation Corps but will be gradually returned to duty. There were forty-nine qualified flight surgeons in the division of aviation medicine at the close of the fiscal year. There were 508 medical officers and 188 dental officers in the reserve corps. During the year eleven new officers were commissioned and twenty-four were separated from the service—eleven by retirement, eight by resignation and five by death. Research projects of the year concerned the use of the submarine "lung," deep-sea diving, chemical warfare, ventilation of ships, and physiologic effects of sudden changes in speed and direction of airplane flight.

CORRECTION

Discussion by Dr. Gutierrez.—In the abstract of discussion in THE JOURNAL, January 20, page 192, the word "cystoscopy" is incorrectly used for the word "cystostomy" in the discussion of Dr. Robert Gutierrez of New York. In the fourth line from the end of this discussion, the part beginning with "first removing the obstruction" should read as follows: "first a cystostomy is performed to relieve the infection and back pressure; secondly a prostatectomy to remove the obstruction; and, thirdly, a diverticulectomy."

Foreign Letters

LONDON

(From Our Regular Correspondent)

Jan. 20, 1934.

The Voluntary Sterilization of Mental Defectives

In 1932 the minister of health received a deputation from the Association of Municipal Corporations, the County Councils Association and the Mental Hospitals Association, because of the growing burden on the community imposed by mental defectives. The result was that a sterilization committee was appointed to consider the prevention of the propagation of defectives. Among the members were Mr. Wilfred Trotter, sergeant surgeon to the king, eminent both as a surgeon and as a philosopher; Dr. A. F. Tredgold, an authority on mental deficiency; Prof. R. A. Fisher, and Dr. R. H. Crowley, senior medical officer of the board of education. They made careful inquiries into the causes of mental deficiency and mental disorder and heard the evidence of sixty witnesses, among whom were representatives of the Royal Colleges of Physicians and Surgeons, biologists, geneticists, psychiatrists and social workers. Nearly all the witnesses agreed in principle as to the legalization of voluntary sterilization and the undesirability of permitting mental defectives and persons liable to recurrent attacks of insanity to become parents. The committee's report has just been published. It considers that a calculation previously made by another committee that the number of mental defectives in England and Wales was not less than 300,000 is not an overestimate. As far as the committee can see, the incidence of mental deficiency is increasing, though not at a rapid rate, and there is no ground for the alarmist talk of wholesale racial deterioration. It finds that inheritance plays a large part in the causation: in not less than 80 per cent of the cases it is a contributory factor, although in many instances unfavorable environment is also a cause. The committee made an inquiry, which it considers of great importance. For the first time, instead of asking what kind of parents the defectives had, the investigators asked what the children of defectives were like. They found that of 1,800 children of mental defectives between 7 and 13 years of age, 40 per cent were subnormal mentally, and of 1,850 children over 13 years of age, 45 per cent were mentally subnormal. As one fourth of the children of the mentally defective parents under review had died and the percentages apply only to survivors, it is submitted that the figures indicate an urgent problem. In regard to what is comprehensively termed "insanity" by the public, the committee considers that inheritance here also plays a large part in causation.

THE COMMITTEE'S RECOMMENDATION

The committee was impressed by two things: the dead weight of social inefficiency and individual misery entailed by such a large and increasing number of defectives, and the injustice of refusing those who may have good grounds for believing that they may transmit mental defect and who are in every way unfitted for parenthood the only effective means of escaping from a burden they dread. Compulsory sterilization the committee rejects, as it could be justified only if it could be shown that some of the offspring of a particular person were bound to be mentally deficient. In the present state of scientific knowledge, this cannot with certainty be predicted by examination of one partner of a union. Also compulsion would defeat itself, for if public opinion is favorable it would be unnecessary; if indifferent, compulsion would tend to turn indifference into hostility and mental deficiency would be driven under ground. The committee therefore recommends that voluntary sterilization be made legal. Voluntary absti-

nence is not a remedy. It is idle to expect that the section of the community least capable of self control will restrain one of the strongest impulses of mankind. When the patient is not competent to give consent, that of the parents or guardians must be obtained. When the patient cannot bear the full cost of the operation, this will be paid by the authorities concerned. In all stages the procedure is to be treated as confidential. The patient, when married, must notify the spouse of the application. The committee points out that legislation in America has been effective only in those states in which sterilization is performed on a voluntary and not on a compulsory basis. The committee's recommendations are wider than its terms of reference—that sterilization should be legalized also for persons suffering from or liable to transmit a grave physical disability, such as blindness, deaf-mutism, hemophilia and brachydactylia. "The case for legal sterilization," it says, "rests on the broad principle that no person, unless conscience bids, ought to be forced to choose between complete abstinence from sexual activities and risking bringing into the world children whose disabilities will be a burden to themselves and to society." In the case of a person who has suffered from mental disorder, the operation should not be performed until a competent psychiatrist has reported that in his opinion no injurious results will be likely to follow. In all cases in which the patient is capable of giving consent, he should sign a declaration of willingness to be sterilized. Physicians in recommending sterilization should have protection similar to that accorded in the certification of lunacy. Two medical certificates are to be required for each operation, one from the family physician and one from a physician on a list approved by the minister of health. Doubtful cases are to be referred by the minister to a small advisory committee of physicians and geneticists.

As there may be considerable difficulty in determining the applications of persons who are suffering from or are believed to be the carriers of inherited diseases and disabilities, the committee advises the appointment of a small advisory committee of physicians and geneticists to which the ministry of health may refer doubtful cases. It is recommended that sterilization shall not be performed in any mental hospital or mental deficiency institution, so that the impression may be avoided that it is in any way connected with the institution.

Increase of Road Accidents

Every day in 1933, 19 persons were killed and 592 injured on the roads of Great Britain—an increase in the deaths of more than one per day over those of 1932. This alarming toll is shown in the official figures for 1933, just issued:

	1933	1932	Increase
Total road accidents in Great Britain	191,829	184,006	7,823
Total deaths	7,125	6,667	458
Injured persons	216,401	206,450	9,951
London			
Killed	1,409	1,266	143
Injured	56,967	52,447	4,520

The streets of the big cities and towns are the most dangerous, with London the worst.

This increase of accidents is disappointing, in view of the fact that the government has attempted to deal with the terrible road peril by legislation and that such devices as one-way traffic, marking of the roads, danger signals and automatic control of traffic by colored lights have been introduced. Concern has been expressed in many quarters. Sir A. K. Butterworth, chairman of the Pedestrians Association, is more convinced than ever that, until speed on the roads is reduced, improvement cannot be expected. The increase of accidents does not imply more dangerous driving, for it may be due to the greater number of automobiles. A census taken last summer by the Automobile Association showed an increase of a million vehicles over 1928.

Improvements in X-Ray Technic

At the congress of the British Institute of Radiology, Dr. A. Bouwers of Eindthoven delivered a lecture on "Modern X-Ray Developments" and showed one of the smallest x-ray machines in the world, an instrument weighing only 7 pounds and capable of taking perfect photographs in two seconds. He described the chief objects of modern developments as the obtaining of still better results and greater simplicity of method. The Geiger counter was a highly sensitive device for dose measurement but so far had been used exclusively for other radiation. Referring to the disintegration of atoms, he said that if the application of the neutrons in combating cancer proved successful it was still an open question whether the interesting method of Lawrence or the method of the high tension generator would constitute the best source.

Inferiority of Artificially Prepared Vitamins to Fresh Foods

Lecturing to the Edinburgh Women's Citizens' Association, Dr. Chalmers Watson said that the clinical value of vitamins prepared in the laboratory fell far short of expectations based on the claims made. The impression was gaining ground that by far the best way of administering vitamins was to give a sufficiency of good fresh foods.

PARIS

(From Our Regular Correspondent)

Jan. 3, 1934.

Vaccination Against Diphtheria

It will be recalled that Mr. Ramon and Mr. Debré, by increasing the potency of antidiphtheritic anatoxin (toxoid), were able to reduce the number of injections and to confer, at the same time, a stronger and more durable immunity. Several hundred children have been vaccinated, in Belgium, France and Tunisia, by means of two injections (1 and 2 cc., respectively, with an interval of three weeks) of a diphtheritic anatoxin with a potency of twenty antigenic units. One month after the second injection, 99.5 per cent of the children had become immunized, as shown by a negative Schick test. The conferring of immunity by means of two injections of an anatoxin, with a potency of at least twenty units, does not render superfluous the precaution of giving a third injection, six months or a year or more, after the vaccination. By this precaution one reenforces the immunity of certain children in whom the amount of antitoxin received was scarcely sufficient immediately after the vaccination or in whom the immunity conferred has become reduced, and one strengthens in this manner the resistance of vaccinated subjects toward diphtheria. The immunity is further strengthened if, at the same time, an injection of antityphoid vaccine is given. This fact was discovered by Mr. Crouzon, but Mr. Ramon has fully confirmed that the two vaccinations (antidiphtheritic and antityphoid) given simultaneously, instead of inducing an antagonism, mutually strengthen each other in a remarkable manner. One secures in this manner a much stronger and more durable immunity.

Treatment for Operative Shock

Professor Pauchet recently recommended a treatment for accidents ascribable to operative shock, with which he states that he has secured excellent results. Blood transfusion aids only in the event of fall of arterial pressure or loss of blood cells through hemorrhage. Pauchet decided to use embryonic tissues, which are rich in trephones. Embryonic tissues of cows—which exert a cytogenic action on the cells of all tissues—had already been employed. Pauchet, finding that those trephones do not keep well, used the trephones of a chicken embryo, prepared as occasion requires. He selects embryos from eggs that have been incubated from nine to eleven days. He grinds them up

with physiologic solution of sodium chloride, filters the mixture, and then transfers it to ampules containing 100 cc. each, without sterilization. It should be used within forty-eight hours by the buccal route or, which is still better, by rectal injection. Pauchet administers one ampule a day for the two days preceding the operation, in order to increase the resistance of the subject. In case of shock during the operation, he prescribes another ampule. Then, if signs of shock appear after the operation, he prescribes an ampule at the end of 3.6 and of twelve hours. The observations reported by Pauchet are extremely convincing. It was a question of patients who had undergone long operations for gastric or intestinal ulcers, with extensive resections of the digestive tract, who nevertheless, on the following day, were in good condition, with normal blood pressure and good color.

Sedentary Diseases

The recent session of the Société de pathologie comparée was devoted to a single topic, the disorders incident to a sedentary life. Dr. Bellin du Coteau, an ardent sport advocate, began his remarks with the statement that intensive physical culture belonged only to youth, and primarily to the period that precedes the completion of body growth. Later, its rôle is merely to preserve, by proper training, the results acquired. One should not expect, when taken up late in life, that it will modify the constitution. Mr. de Chaisemartin emphasized the need of medical supervision of all intensive sport activities. Professor Marcel Labbé discussed the effects of a sedentary life on organic equilibrium. The disorders are manifested by the development of a type of obesity which differs from that due to excessive diet. The locomotor apparatus — muscles, bones, joints—is deeply affected, which is manifested by muscular atrophy and the weakness of movements, stiffness of joints, and fragility of the bones. The respiratory functions are diminished and the thorax does not develop properly. The circulatory functions are retarded, and the extremities are cold. Digestion is poor. Finally, the intellectual energy and the morale become impaired. Mr. Boigey, who described the situation with even greater preciseness, said that in some persons who have led a highly sedentary life for a long time and have abandoned all forms of physical exercise there develops an infiltration of the cellular tissues by the body fluids. One observes in them a sort of general inhibition of the movability of the smooth muscles, a condition resulting in tenacious algias in the areas of the infiltrated cellular tissue. In this process, no trace of inflammation or infection can be discovered. There is never any rise of temperature. Such a condition is due solely to algias associated with cellular infiltration. Hereditary tuberculosis, chronic alcoholism and syphilis frequently predispose these subjects to cellular infiltration. But it is chiefly hereditary deficiency of elastic tissue that constitutes the predisposing cause. In many subjects so affected there are concomitant ptoses, hernias, gastric dilatation, varices, and livid streaks on the thighs and breast.

The treatment may be summed up in two words: exercise and massage. Exercise increases metabolism and favors the fixation of oxygen in the tissues. It checks in this manner the production of acidity and prevents hydrophilia of the tissues from manifesting itself.

Deaths

Dr. Léopold Lévi, who has died at an early age, was the best known specialist in endocrinology in France. His book, Opothérapie endocrinienne, was awarded a prize by the Academy of Sciences. Professor Achard had created for him a special consultation service in endocrinology, in his department at the Hôtel-Dieu.

Dr. Boureau, the chief anesthetist of Professor Gosset, has died under peculiar conditions. During sleep, a dental bridge became detached and entered the lung. In spite of three interventions to remove the foreign body, which roentgen examination revealed clearly, the patient succumbed to pulmonary gangrene.

BERLIN

(From Our Regular Correspondent)

Jan. 1, 1934.

The Health of the Youth of Germany

According to statements of Dr. Hans Hoske, consulting physician for the department of juvenile welfare connected with the public works administration, health conditions among the youth of Germany pursuing a gainful occupation are unfavorable. In general, about a third of the juveniles do not present a full capacity for work. The percentage of apprentices who are in need of treatment or prolonged relaxation is much higher in the large cities (43.3 per cent) than in the cities with a population under 20,000 (33.04 per cent). The cities of East Prussia, surrounded by a healthy rural population, present a much lower proportion of persons in need of treatment (22.2 per cent) than the average of the small cities (33.47 per cent). The damaging effects of city life, as regards air and light conditions, are especially marked in the girls. Dr. Hoske calls attention to the circulatory disturbances in juveniles and to the nervous conditions especially in girls. Only 38 per cent of the girl apprentices and 37.5 per cent of the boy apprentices take systematic bodily exercise. From this neglected class of persons come later those who constitute a heavy burden for the social insurance system. It will be necessary, with respect to the juveniles who have just finished their schooling, to introduce frequent vacations into the working period, and gradually, at the end of the apprenticeship, to accustom them to the working hours of adults. Furthermore, large numbers of young persons gainfully employed do not have an adequate legally regulated paid vacation. This problem is absolutely in need of federal regulation. It appears that, in the future, supervised vacations (that is to say, control with a view to enforcing proper rest and recreation) will have to be inaugurated.

The Law Pertaining to the Protection of Animals

In May 1933, through changes in the penal code, increased protection was given to animals (THE JOURNAL, Sept. 23, 1933, p. 1011), and now the federal law, which becomes effective, February 1, has been published. The law states that "Unnecessary tormenting or rude treatment of animals is prohibited," and that is explained in the next provision: "Any person who causes an animal long continued or repeated pain or suffering of a noteworthy degree is guilty of tormenting such animal. Tormenting of an animal is unnecessary if it serves no reasonable, justified purpose. Any person who causes an animal considerable pain maltreats such animal. Maltreatment is rude when it results from a lack of feeling." Certain forms of tormenting are prohibited in detail: neglecting an animal that is being cared for so that it suffers from such neglect noteworthy pain or marked damage; using an animal unnecessarily for the performance of work that is evidently beyond its strength and causes it noteworthy pain; this applies also to animal training, preparation of motion pictures, and the like, when associated with noteworthy pain or damage to health; the disposing of or acquiring of a domestic animal that is ill, weak, worn out or old, and for which continued existence is a torment, for any other purpose than immediately to put it out of its misery by a painless process; the exposing of an animal to the elements, in order to get rid of it; the training of dogs by inducing them to chase living cats, foxes, or other animals, or testing them in such manner; the clipping or cutting of the ears or tail of a dog more than 2 weeks old, except under anesthesia; the shortening of the dock of a horse, except in

case of disease (and then only by a veterinarian under anesthesia); the carrying out of any painful intervention on an animal in an unsuitable manner and without anesthesia; as painful interventions may be mentioned in detail the castration of horses, bovines or swine (if more than 3 months old) or pubescent rams and he-goats. Anesthesia is not required in interventions on animals if the pain involved is but slight or if similar interventions are commonly performed on man, without anesthesia, or if, in the opinion of veterinarians, anesthesia is impracticable. The application of forced feeding to poultry is prohibited; likewise the detachment of legs of living frogs.

Regulations concerning experiments on living animals, as finally adopted, supersede the temporary provisions announced a few months ago (THE JOURNAL, Oct. 28, 1933, p. 1404). In principle, persons are prohibited from performing interventions on living animals or applying treatments to them, if such interventions are associated with noteworthy pain or damage; this prohibition covers all painful and operative experiments, including bloodless or other experiments. The term "experiment" comprises not only the first intervention or the first treatment but also the whole course of an experiment extending over a longer period of time. These special regulations are designed for the speedy elimination of unauthorized persons who have heretofore engaged in animal experimentation. The federal minister of the interior may extend to certain scientific institutes permission to perform animal experiments, if all requirements have been met. Any person, however, who undertakes such experiments without permission shall receive a prison sentence up to six months, in addition to the imposition of a fine. Only reliable persons who have completed a course in a university will be regarded as responsible directors of institutes. Experiments may be carried out only on the full responsibility of the scientific director or his specifically empowered representative, and only by properly trained persons, or under their direction, and then only with the avoidance of all unnecessary infliction of pain. Experiments for research purposes may be undertaken only in case they promise a definite result not yet confirmed by science or serve to clarify previously unsolved problems. Experiments may be performed only under anesthesia (local or general) unless, in the opinion of the scientific director, the purpose of the experiment absolutely excludes anesthesia, or in case, by the application of anesthesia, an animal would be worried more or its well being would be more impaired than by the intervention to be performed. In the exceptional cases in which a severe operative or bloodless painless experiment must be undertaken, no second experiment of the kind may be performed on the same animal. In extensive interventions or in the event of extreme pain, animals should be killed at once. Experiments on horses, dogs, cats or monkeys may be performed only when through experiments on other animals the objective cannot be attained. Animal experiments for instruction purposes are permitted only in the event that pictures, models, prepared specimens and films do not suffice. Reports should be made of animal experiments—which should include a clear statement of their purpose. Exceptions to these provisions lie in favor of experiments connected with the administration of justice, and vaccinations and blood withdrawals for diagnostic purposes, or for the obtaining or testing of serums or vaccines in accordance with recognized or officially approved procedures. Here, too, if conditions require it, animals should be painlessly killed.

Dr. Giese, the administrator in the federal ministry of the interior, stated that, through the application of these strict, officially controlled measures, a guaranty would be furnished that experiments on living animals will no longer be regarded by a large portion of the population as cruel or immoral acts but rather as an important link in the chain of research methods. Accordingly, the daily press is expected to refrain from publishing reports of experiments on living animals, and the medical press is urged to describe, if occasion arises, all animal experiments in such a manner that it is apparent that all possible consideration was shown the experimental animals.

The penalties have been greatly increased. Unnecessary tormenting or the cruel treatment of an animal renders a person liable to a prison sentence up to two years, in addition to a fine. It may be ordered also that the tormented animal shall be cared for elsewhere, up to three months, at the expense of the guilty party. If any individual wilfully or through carelessness shall neglect to restrain children or other persons under his (or her) supervision, and belonging to the same household, from acting in violation of this law, he shall be subject to punishment.

Another result of the new law is the official merger of the 679 societies for the protection of animals to form the Reichstierschutzbund, the president of which is Dr. Buttmann, the director of the department of public instruction, associated with the federal ministry of the interior.

The Hygienic Conditions of Sanatoriums

The economic situation of the convalescents' homes and sanatoriums of the carriers of the federal insurance system has become so unfavorable that an investigation and reorganization committee, with participation of the krankenkassen, has been appointed to improve the sanitary conditions in these institutions. A general shifting of patients and a reassignment to be effected by a central committee are planned. Institutions that, from an economic and a medical point of view, have proved to be impracticable will either be closed or used for other purposes. In 1931, the homes of the krankenkassen were occupied only up to 50 per cent of capacity and in 1932 only up to 30 per cent, so that many krankenkassen have had to raise their rates charged in these homes, in order to pay operating expenses. The mistake that has caused the most trouble is that many krankenkassen thought that they ought to have a convalescents' home or a sanatorium of their own (or sometimes more than one), so that, in many regions, more homes exist than there is need for, with the result that all, in recent years, have been only partly occupied.

BUENOS AIRES

(From Our Regular Correspondent)

Dec. 5, 1933.

Treatment of Hydrocyanic Acid Poisoning

The experimental work of Dr. Enrique Hug shows that an antidote for hydrocyanic acid poisoning is the association of sodium thiosulphate and sodium nitrite. Sodium nitrite injected intravenously changes some of the hemoglobin into methemoglobin. The methemoglobin, in turn, combines with hydrocyanic acid to form a less toxic cyanhemoglobin. Then sodium thiosulphate is injected. If used alone, intravenously, sodium nitrite or sodium thiosulphate may save persons poisoned by hydrocyanic acid; but if given together, their efficacy increases. Amyl nitrite may be given by inhalation at first to get rapid action, but its value is less than that of sodium nitrite intravenously. These studies have been made in a large number of rabbits poisoned by ingestion and in dogs poisoned by the subcutaneous and intravenous routes. Two human cases at Montevideo and at Rosario have been observed. In man it is advisable to give doses of from 0.1 to 0.2 Gm. of a 2 per cent solution of sodium nitrite, intravenously, alternating with injections of from 2 to 3 Gm. of a 20 per cent solution of sodium thiosulphate. The injection of sodium nitrite should never exceed 1 Gm. The life of one of the patients was saved after the injection of 1.5 Gm. of sodium nitrite but severe cyanosis appeared.

Study of Hydatidosis

Dr. Juan Bacigalupo, associate professor of parasitology in the Faculty of Medicine of Buenos Aires, has reported to the Societies of Biology and Surgery some important work on echinococcosis. He observed that the scolices introduced either in the stomach or in the rectum of rabbits or guinea-pigs migrate through the intestinal mucosa and some reach the peritoneal cavity. A few days later numerous scolices are found in the lung, where they give the lung the appearance of having pneumonic or miliary foci. He believes that the probable route of the scolices is through the intestinal lacteals to the thoracic duct and then through the large veins to the lung. These experiments show that the presence of scolices in the intestine of mammals is as dangerous as the presence of ova of Taenia, as they lead to infestation of the organism, with the production of hydatid cysts. The partial rupture of hydatid cysts into the biliary system, allowing the passage of numerous scolices into the intestine, is a frequent occurrence. The scolices then can traverse the intestinal wall, causing the reinfestation of the patient and the production of new cysts. The rupture of hydatid cysts into the bronchi may also permit the ingestion of some scolices.

Congress of Medicine to Discuss Amebiasis

The fifth Congress of Medicine will take place in Rosario, September 2-9. The national government has given 100,000 pesos ($25,000) for this purpose. The committee on organization, presided over by Dr. Camilo Muniagurria, decided that amebiasis will be the official topic to be discussed. Drs. O. da Fonseca of Rio de Janeiro, Guido Izar of Milan, Dobell of London, Greenway Castex and Marotta of Buenos Aires, and Mazza of Jujuy have been invited as official speakers. Drs. Ludwig Aschoff of Freiburg and C. de Moura Campos of São Paulo have also been invited to present papers on the subject. There will be discussions on anatomy, physiology and biochemistry, pathology, internal medicine, surgery and several specialties, and medical education.

Dysentery

Dr. Sordelli has reported cases of bacillary dysentery in Las Varillas, Córdoba, Entre Ríos, Goya, Corrientes and the federal capital. The outbreaks have been local and with little mortality. Bacilli of the Flexner, Shiga, Sonne and some other types were isolated.

Exanthematous Typhus

Although there are epidemics of exanthematous typhus in Chile and Bolivia, up to the present no cases have been observed in Argentina. Nevertheless some cases, which do not seem to be of an endemic form, have been reported from the provinces of Tinogasta, Catamarca.

Mottled Enamel

Dr. Damon has collected data concerning the regions of Argentina in which "mottled enamel" is observed. Muñoz has verified the increase of fluorides in the water supply of those regions.

Validity of Foreign Diplomas in Argentina

The College of Physicians and other similar local associations have asked that the requirements for revalidation of foreign diplomas be increased, demanding a minimum of five years' stay in the country before the candidates are permitted to take the examination for practice. A law proposed by Senator Serrey has passed the senate, but it will not be passed, it seems, by the chamber of deputies. This has caused great excitement among graduates of Argentine universities. This bill proposes that all Argentineans graduated in foreign countries may practice in Argentina without examination; their diplomas would be considered valid by a simple declaration of the government. At present foreign physicians must take theoretical and practical examinations in clinical medicine, surgery and obstetrics in the faculties of medicine. Even this simple examination would be suppressed by the proposed law. The universities have protested, as they have the exclusive right to issue diplomas that permit professional practice in Argentina.

Lectures by Foreign Guests

Lectures have been recently given in Argentina by Professor Haen of Berlin on hygiene, Prof. Fauré Fremiet of the College of France, in Paris, on physicochemistry of the cell, and Prof. Ludwig Fraenkel of Breslau on pathology and clinical pathology in women. During the year, Argentina will be visited by Filippo Bottazzi of Naples, L. Binet of Paris, A. Chatton of Montpellier and Ludwig Aschoff of Freiburg. Drs. Garcia Lagos, Barcia, Rossello, Garcia Otero and Velasco Lombardini, all of Montevideo, have recently given lectures in Argentina on gastric ulcer, pulmonary radiology, photosensibility, bronchial obstruction and electrocardiography, respectively.

RIO DE JANEIRO

(From Our Regular Correspondent)

Nov. 20, 1933.

Lecture on Yellow Fever

Dr. Fred L. Soper gave a lecture before the National Academy of Medicine on yellow fever. He demonstrated that the endemic index does not always correspond with the culex index, which includes probably Culex mansoni, Aedes aegypti and Psorophora. He reported on studies made in the valley of Chanaan at Espirito Santo, where he had the opportunity of verifying the foregoing facts. The previous existence of yellow fever there was confirmed by immunologic studies on the blood of cured persons and by pathognomonic lesions of the liver found in persons who died.

The author pointed to the necessity of organizing, in suspected localities, a service of systematic necropsies of all persons who die in less than ten days of a febrile disease. This service has already been established by a law of the provisional government, and a laboratory of the Rockefeller Foundation in Bahia has made 29,000 postmortem verifications. Dr. Soper reviewed the status of the yellow fever problem, which is not only Brazilian or continental but international, especially in relation to the west coast of Africa and to Central and South America. Dr. Soper stated that new measures must be taken to eradicate yellow fever from the American continent. He praised the yellow fever services rendered by the department of public health and the spirit of cooperation of Brazilian sanitarians who have so nobly helped the Rockefeller Foundation. He recommended (1) the organization of an antilarval service in all cities, towns and villages suspected of being infected, (2) the creation of the postmortem service, (3) organization of the campaign against mosquitoes by a classification as complete as possible of the species found and verification of the possibility of transmission of the disease through them, (4) the organization of a service of rural sanitation, and (5) sanitary and economic measures to attain the proposed objects.

Opening of Surgical Tuberculosis Service

A few days ago, the new surgical tuberculosis service of the General Policlinic of Rio, directed by Prof. A. MacDowell was inaugurated. Numerous persons participated in the celebration. The new surgical section consists of a spacious and well equipped operating room, a modern sterilizing room, wards and an emergency kitchen. The new organization is an innovation here. It is the first surgical organization devoted especially to the treatment of pulmonary and bone tuberculosis installed in the country.

BELGIUM

(From Our Regular Correspondent)

Nov. 25, 1933.

Treatment of Detachment of the Retina

Mr. H. Coppez, addressing the Royal Academy of Medicine, recalled that the new treatment for detachment of the retina has awakened great interest, as this disorder was formerly regarded as incurable. He surveyed the factors involved in this serious problem, which is approaching a satisfactory solution.

Gonin, about 1923, in attempting to remedy a laceration of the retina with the thermocautery, produced adhesions that attached the retina to the outermost coat of the eye. He then brought about adhesive chorioretinitis, by the Sourdille method, but confined it to the laceration and to the neighboring tissues. It will be recalled that Sourdille produces adhesive chorioretinitis by injecting under the conjunctiva a solution of mercuric cyanide and puncturing the outermost coat of the eye in several places.

Both of these operations, though they give satisfactory results, present serious inconveniences. The method of Guist and Lindner of Vienna, who inject a small drop of a 3 per cent solution of potassium hydroxide between the choroid and the sclera, and the more recent methods of using diathermy, led Léon Coppez to propose a new operative technic, which has given such results that the speaker did not hesitate to advocate giving it a trial. The technic consists of extraocular applications with the aid of a special electrode (pyrometric electrode), which enables the operator to measure exactly the dose of diathermocoagulation.

After determining the extent of the detachment and noting the retinal laceration, one prepares a diagram of the lesions. After three or four days' rest to bring about a temporary reapplication of the retina to the choroid, the sclera is denuded over the whole area corresponding to the detachment. The laceration is encircled by contiguous diathermic applications to form a continuous barrage of choroiditis. Diathermic applications are then made in parallel rows both vertically and horizontally throughout the denuded scleral area. Thus the laceration is remedied, and the retina becomes attached throughout the whole detached area. In order to assure permanent contact of the retina and the choroid, it is necessary to evacuate the subretinal fluid, at the time of the operation and after the operation, by "trepaning" two or more of the lowest diathermic foci and incising crosswise the layer of scleral tissue that has been left.

Intestinal Tuberculosis

In the *Revue belge de la tuberculose*, Warmoes discusses secondary intestinal tuberculosis, which occurs in a considerable number of cases of arrested pulmonary tuberculosis. The intestinal lesions continue their evolution, whereas the pulmonary lesions are arrested. Intestinal tuberculosis takes three forms: ulcerous, fibrous (or hypertrophic), and ulcerofibrous (a mixed type).

Of 260 cases of pulmonary tuberculosis examined at Syssele, near Bruges, intestinal tuberculosis was found in seventy-two, or 27.6 per cent; of forty-three cases with beginning pulmonary lesions, in one; of fifty-seven cases with slightly evolutional unilateral lesions, in two; of 108 cases of extensive evolutional lesions, in thirty. In itself, intestinal tuberculosis does not always present an immediate grave prognosis. Some types develop slowly but produce a deterioration of the patient's general health.

Warmoes proposed forms of treatment: vitamins, roentgenotherapy, heliotherapy, surgery. He emphasized that, by means of radiology, it is possible to detect intestinal lesions and that consequently a radiologic examination is advisable in all cases of pulmonary tuberculosis in which the general condition of the patient is worse than the condition of the lungs would lead one to expect.

Results Secured with Anatoxin

Numerous trials have been made in Belgium with antidiphtheritic vaccination by means of the specific anatoxin of Ramon, Timbal and Nélis, and particularly with immunization in two stages with diphtheritic anatoxin naturally rich in antigenic units (from 20 to 30 units). From the systematic application of vaccination with anatoxin, such as has been carried on for several years, and from the total number of observations made in 14,000 children vaccinated, these authors conclude that:

Antidiphtheritic vaccination with anatoxin has been found virtually harmless. The anatoxin if properly prepared and controlled is incapable of provoking a specific intoxication of the slightest nature. The reactions that one may observe in certain persons are associated particularly with the amount of anatoxin in the form of specific antigenic substance; they are always transient and never dangerous. The vaccination never has any bad influence on the later development of the vaccinated child.

The injection of anatoxin is not followed by a negative phase; it does not make the vaccinated subjects more sensitive to diphtheritic infection or to other diseases.

If it possesses a sufficient number of flocculation units and is injected according to the prescribed technic, in the doses and in the intervals of time recommended, anatoxin produces immunity in a high percentage of vaccinated subjects.

The immunity conferred by the anatoxin is of long duration. The percentage of subjects immunized does not diminish during the years following the vaccination.

When applied in the form of two injections (from 1 to 2 cc., with an interval of three weeks, the anatoxin having a potency of at least 20 antigenic units), the vaccination is capable of developing an immunity that gives a negative Schick reaction in from 99 to 100 per cent of the vaccinated subjects. Thus, the reduction of the injections of anatoxin from three to two, and the immunity conferred on practically all the subjects vaccinated, constitute a twofold improvement.

The numerous examples here given, which are drawn from an extensive application, prove that vaccination with anatoxin, undertaken systematically and properly, diminishes considerably the morbidity of diphtheria. It checks the progress of endemic and epidemic diphtheria. It constitutes, therefore, the preferred method for the individual and collective prophylaxis of diphtheria.

Marriages

CHARLES H. HALLIDAY, Baltimore, to Miss Frances Allen Steger of University, Va., at Gettysburg, Pa., Dec. 1, 1933.

GEORGE EDWARD URBAN, Baltimore, to Miss Ellen Josephine Stafford of Catonsville, Md., at Media, Pa., Sept. 23, 1933.

FRANCIS WILCOX GLUCK, Baltimore, to Miss Jean Harvey Anderson of Port Deposit, Md., February 2.

MARTIN F. STEIN, New York, to Miss Cynthia Ruth Van Atten of East Orange, N. J., January 20.

JAMES GRADY FAULK, Pembroke, N. C., to Miss Sallie Jane Williams, at Wingate, Dec. 27, 1933.

HYMAN MORRIS HUREVITZ, Iowa City, to Miss Edith Robinson of New York, Nov. 12, 1933.

BYRON EUGENE BOYER to Miss Margaret Hall Richardson, both of Cincinnati, Nov. 4, 1933.

WILLIAM WARREN SOUTHWICK, Marshalltown, Iowa, to Miss Vera Clark, Nov. 17, 1933.

CHARLIE NEWTON WASDEN to Miss Eugenia Coleman, both of Macon, Ga., Dec. 30, 1933.

SHELDON WILSON REAGAN to Miss Maryan Bryan, both of Elgin, Ill., January 20.

Deaths

Arthur David Dunn ● Omaha; Rush Medical College, Chicago, 1902; member of the House of Delegates of the American Medical Association, 1922-1929; professor and chairman, department of clinical research, University of Nebraska College of Medicine; formerly professor of medicine and clinical medicine and vice dean, Creighton University College of Medicine; member of the Association of American Physicians and fellow of the American College of Physicians; past president of the Missouri Valley Medical Society and president-elect of the Omaha Mid-West Clinical Society; on the staff of the Clarkson Hospital; formerly on the staff of the Creighton Memorial, St. Joseph's Hospital; at one time coroner's physician in Omaha; member of the council on medical education and as such member was active in making the survey of Nebraska hospitals; aged 60; died, January 8, of heart disease.

George Edwin McKean ● Detroit; University of Michigan Medical School, Ann Arbor, 1894; professor of medicine, Detroit College of Medicine and Surgery; fellow of the American College of Physicians; past president of the Wayne County Medical Society; served during the World War; on the staffs of the Harper Hospital, Woman's Hospital, St. Joseph's Mercy Hospital, Evangelical Hospital and the Highland Park (Mich.) Hospital; aged 65; died, February 4, of pneumococcic meningitis, acute otitis media and mastoiditis.

Frederic William Sears, Burlington, Vt.; University of Vermont College of Medicine, Burlington, 1888; member and past president of the Vermont State Medical Society; professor of neurology at his alma mater; member of the New England Society of Psychiatry; president of the Burlington Health Commission, 1914-1917; neurologist to the Mary Fletcher, Fanny Allen and Bishop de Goesbriand hospitals; formerly superintendent of the Lakeview Sanatorium; aged 74; died, January 2.

Robert Young Sullivan ● Washington, D. C.; Georgetown University School of Medicine, Washington, 1905; formerly associate professor of obstetrics and professor of gynecology at his alma mater; fellow of the American College of Surgeons; on the staffs of the Georgetown University and Providence hospitals, Columbia Hospital for Women, and the U. S. Veterans Hospital, Diagnostic Center; aged 52; died, January 16, at Saranac Lake, N. Y.

Royal Tharp ● East St. Louis, Ill.; St. Louis College of Physicians and Surgeons, 1906; past president of St. Clair County Medical Society; member of the American Urological Association; on the staff of St. Mary's Hospital; served during the World War; aged 49; was killed, Dec. 21, 1933, in an automobile accident.

Edward Mahlon Palmer ● Wichita, Kan.; University Medical College of Kansas City, 1904; member of the American Academy of Ophthalmology and Oto-Laryngology; fellow of the American College of Surgeons; on the staff of the Wesley Hospital; aged 59; died, Dec. 31, of angina pectoris.

Otto O. Svebakken ● Decorah, Iowa; American College of Medicine and Surgery, Chicago, 1906; past president of the Winneshiek County Medical Society; on the staff of the Decorah Hospital; aged 58; was killed, January 12, in an automobile accident near Chiefland, Fla.

Michael Shelly Picard ● Shreveport, La.; Tulane University of Louisiana Medical Department, New Orleans, 1903; past president of the Caddo Parish Medical Society; on the staff of the Shreveport Charity Hospital; aged 54; died, Dec. 31, 1933, of heart disease.

Logan Lightfoot Thomas, Dawson, Ga.; Georgia College of Eclectic Medicine and Surgery, Atlanta, 1897; member of the Medical Association of Georgia; veteran of the Spanish-American War; aged 68; died, Dec. 11, 1933, of chronic nephritis.

George Hempstead Kennett ● Kellogg, Idaho; Rush Medical College, Chicago, 1902; president of the Shoshone County Medical Society; formerly physician and owner of the Wardner Hospital; aged 56; died, Dec. 1, 1933, of heart disease.

Harry English Shaw, Long Branch, N. J.; Bellevue Hospital Medical College, New York, 1898; fellow of the American College of Surgeons; consulting surgeon to the Monmouth Memorial Hospital; aged 61; died, January 17, of pneumonia.

Walter Winfield Widener, Mountain City, Tenn.; Tennessee Medical College, Knoxville, 1900; member of the Tennessee State Medical Association; served during the World War; aged 62; died, Dec. 23, 1933, of cerebral hemorrhage.

Arthur Jewett Lougee, Fryeburg, Maine; Columbia University College of Physicians and Surgeons, New York, 1896; member of the Maine Medical Association; aged 63; died, Dec. 21, 1933, in Malden, Mass., of bronchopneumonia.

Moses George Kotler, Malden, Mass.; Tufts College Medical School, Boston, 1920; member of the Massachusetts Medical Society; aged 38; on the staff of the Malden Hospital, where he died, January 7, of pneumococcus meningitis.

Joseph Hubert Ambrose Matte ● North Adams, Mass.; Laval University Faculty of Medicine, Quebec, 1876; member of the school board; on the staff of the North Adams Hospital; aged 85; died, Dec. 9, 1933, of pneumonia.

John Christopher Smith ● Stacyville, Iowa; St. Louis University School of Medicine, 1915; secretary of the Mitchell County Medical Society; formerly mayor of Stacyville; aged 45; died suddenly, Dec. 29, 1933, of heart disease.

Cecil W. Brown, Clinton, Iowa; Western University Faculty of Medicine, London, Ont., Canada, 1906; member of the Associated Anesthetists of the United States and Canada; aged 57; died, January 8, of coronary thrombosis.

Thomas Stamps, Lumber Bridge, N. C.; University of Louisville (Ky.) School of Medicine, 1888; member of the Medical Society of the State of North Carolina; aged 85; died, January 24, in Norfolk, Va., of pneumonia.

Delbert Warren McCrary, Lake City, Iowa; State University of Iowa College of Medicine, Iowa City, 1893; formerly connected with a hospital bearing his name; aged 65; died, January 8, in Pharr, Texas, of heart disease.

George Henry Carveth, Toronto, Ont., Canada; Victoria University Medical Department, Coburg, 1884; member of the Associated Anesthetists of the United States and Canada; aged 75; died, January 27, of heart disease.

Bryant M. Tower, Conneaut, Ohio; Western Reserve University Medical Department, Cleveland, 1883; member of the Ohio State Medical Association; aged 75; died, January 9, in St. Petersburg, Fla., of heart disease.

Alexander Ambrose MacDonald, Boston; Georgetown University School of Medicine, 1895; member of the Massachusetts Medical Society; aged 69; died, January 7, in St. Martha's Hospital, Antigonish, N. S., Canada.

Bartlett Uttimus Sims, Bryan, Texas; Tulane University of Louisiana Medical Department, New Orleans, 1901; served during the World War; aged 55; died, January 6, of injuries received in an automobile accident.

Andreas A. Wipf ● Freeman, S. D.; Rush Medical College, Chicago, 1894; formerly member of the state legislature; aged 65; died, Dec. 21, 1933, in the Sioux Valley Hospital, Sioux Falls, of lobar pneumonia.

Horace Bradford Denman, Springfield, Vt.; Hahnemann Medical College and Hospital of Philadelphia, 1894; member of the Vermont State Medical Society; aged 64; died, Nov. 26, 1933, in Peru, of heart disease.

John William Bosman, Kalamazoo, Mich.; University of Michigan Medical School, Ann Arbor, 1885; member of the Michigan State Medical Society; aged 72; died, January 16, of cerebral hemorrhage.

Emmett Johnson, Kinta, Okla.; University of Tennessee Medical Department, Nashville, 1900; member of the Oklahoma State Medical Association; aged 67; died, January 1, of cerebral hemorrhage.

David Bigger Best ● Wheeling, W. Va.; Rush Medical College, Chicago, 1889; on the staff of the Ohio Valley General Hospital; aged 71; died, January 11, in Bridgeport, Ohio, of myocarditis.

Isaac Reber Wolfe, Espy, Pa.; Jefferson Medical College of Philadelphia, 1895; member of the Medical Society of the State of Pennsylvania; aged 69; died recently, of cerebral hemorrhage.

William J. Greene, Ringgold, Ga.; Chattanooga (Tenn.) Medical College, 1896; member of the Medical Association of Georgia; aged 63; died, January 8, of nephritis and renal calculi.

James Benton Messer, Bluestone, Ky.; American Eclectic Medical College, Cincinnati, 1894; member of the Kentucky State Medical Association; aged 73; died, January 13, of heart disease.

Ernest Leland Peet, Scranton, Pa.; Hahnemann Medical College and Hospital of Philadelphia, 1896; aged 65; died, January 24, of injuries received when struck by an automobile.

Albert Augustus Redelin ● Freeland, Pa.; Jefferson Medical College of Philadelphia, 1893; served during the World War; aged 64; died, Dec. 26, 1933, of cerebral hemorrhage.

Oliver Wilson Spicer, Colorado Springs, Colo.; Chicago Medical College, 1873; member of the Colorado State Medical Society aged 85; died, January 3, of cerebral hemorrhage.

John Dike, Melrose, Mass.; Boston University School of Medicine, 1888; formerly member of the school committee; aged 78; died, January 2, of carcinoma of the liver.

Prince Albert Hobbs, Edgerton, Kan.; Louisville (Ky.) Medical College, 1890; aged 64; died, Dec. 7, 1933, in St. Margaret's Hospital, Kansas City, of heart disease.

John W. Cannon, Boise, Idaho; College of Physicians and Surgeons, Keokuk, Iowa, 1873; aged 84; died, Nov. 26, 1933, in St. Luke's Hospital, of cerebral hemorrhage.

Friend Cook Suiter ● La Crosse, Wis.; State University of Iowa College of Medicine, Iowa City, 1885; aged 76; died, January 14, in New Orleans, of heart disease.

Allen Cone ● Syracuse, N. Y.; Detroit College of Medicine, 1890; aged 69; on the staff of the General Hospital, where he died, January 8, of heart disease.

Walter Thompson Bobo, Battle Creek, Mich.; Marion-Sims College of Medicine, St. Louis, 1899; aged 57; died, January 17, of a self-inflicted bullet wound.

Richard Emory Yellott, Benson, Ariz.; Medical College of the State of South Carolina, Charleston, 1906; aged 58; died, Nov. 28, 1933, of heart disease.

Henry Daniel Cunyers, Rome, Ga.; Louisville (Ky.) Medical College, 1872; Confederate veteran; aged 85; died, Dec. 31, 1933, of chronic nephritis.

Edward Otto Bang ● South Canaan, Pa.; Temple University School of Medicine, Philadelphia, 1906; aged 59; died, January 10, of coronary thrombosis.

Le Roi Scott Syphers, Cornish, Maine; Medical School of Maine, Portland, 1904; aged 59; died, January 16, in a hospital at Portland, of pneumonia.

Ernest Levesque, Sudbury, Ont., Canada; School of Medicine and Surgery of Montreal, Que., 1923; aged 35; died, Oct. 27, 1933, of cerebral hemorrhage.

Nemours Caire, Westwego, La.; Tulane University of Louisiana Medical Department, New Orleans, 1895; aged 52; died, January 8, of heart disease.

Christian Henry Brown, Philadelphia; University of Pennsylvania School of Medicine, Philadelphia, 1878; aged 76; died, Dec. 11, 1933, of heart disease.

Amplias Milton Countryman, Cincinnati; Pulte Medical College, Cincinnati, 1881; aged 79; died, January 15, of diabetes mellitus and myocarditis.

Fred Charles Dana, Fond du Lac, Wis.; Chicago College of Medicine and Surgery, 1915; aged 47; died, January 16, of acute dilatation of the heart.

Burgess E. Scruggs, Huntsville, Ala.; Meharry Medical College, Nashville, Tenn., 1879; aged 76; died, January 21, of myocarditis and influenza.

John C. Mitchell, Waldo, Kan.; Ensworth Medical College, St. Joseph, 1897; also a druggist; aged 59; died, Dec. 30, 1933, of heart disease.

Benjamin Franklin Cox, Palmersville, N. C.; College of Physicians and Surgeons, Baltimore, 1886; aged 83; died, January 4, of heart disease.

James I. Pollum, Du Bois, Pa.; Western Pennsylvania Medical College, Pittsburgh, 1906; aged 57; died, Dec. 30, 1933, of angina pectoris.

Jay Lucullus McLaren ● Bell, Calif.; Long Island College Hospital, Brooklyn, 1888; aged 72; died, January 23, of heart disease.

Kossuth Tinker, Columbus, Ohio; Medical College of Ohio, Cincinnati, 1877; aged 78; was found dead, Dec. 13, 1933, of heart disease.

James C. Banfield, Huntington, W. Va.; Eclectic Medical Institute, Cincinnati, 1885; aged 74; died, January 12, of nephritis.

H. Eugene Delavergne, Kankakee, Ill.; Keokuk (Iowa) Medical College, 1896; aged 72; died, Dec. 26, 1933, of coronary disease.

Duncan McNab, Troy, N. Y.; Albany (N. Y.) Medical College, 1892; aged 63; died, Nov. 12, 1933, of heart disease.

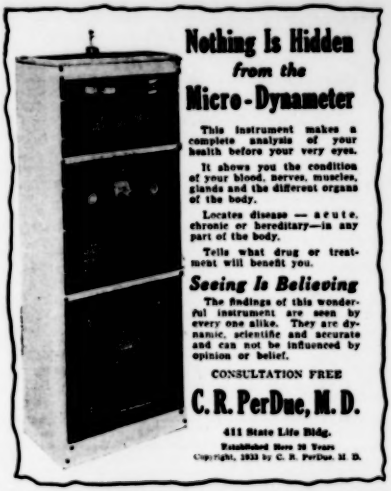
Robert Milton Fields, Goldston, N. C. (licensed, North Carolina, 1909); aged 64; died, January 2, of erysipelas.

Bureau of Investigation

A MICRO-DYNAMICS PRACTITIONER

C. Roland PerDue Makes Another Bid for Fame

Readers of this department of THE JOURNAL will doubtless remember the extended article that was published in the issue of January 6 on "Micro-Dynamics." It dealt with the evolution of a device known as the "Micro-Dynameter" invented by Mr. F. C. Ellis, who is not a physician but who has described himself as a consulting engineer. The article also discussed not only the background on which the device is projected, but the claims made for it.


Nothing Is Hidden
from the
Micro-Dynameter
This instrument makes a complete analysis of your health before your very eyes.
It shows you the condition of your blood, nerves, muscles, glands and the different organs of the body.
Locates disease — acute, chronic or hereditary—in any part of the body.
Tells what drug or treatment will benefit you.
Seeing Is Believing
The findings of this wonderful instrument are seen by every one alike. They are dynamic, scientific and accurate and can not be influenced by opinion or belief.
CONSULTATION FREE
C. R. PerDue, M. D.
411 State Life Bldg.
Established More 20 Years
Copyright, 1933 by C. R. PerDue, M. D.

Photographic reproduction (reduced) of a PerDue advertisement in an Indianapolis newspaper. Diagnosis reduced to the simplicity of a nickel-in-the-slot gum-vending machine.

Following the appearance of the article, Mr. Ellis issued *Special Laboratory Bulletin No. 17*, in which, among other things, he says:

"The American Medical Association fully understood the experimental nature of Mr. Ellis' early activities and evidently endorsed his scientific qualifications as late as 1928, when they sold him exhibit space at their National Convention at Minneapolis and carried his advertising for months in THE JOURNAL of the American Medical Association and in all of the State Medical Journals. Although advertising returns were unsatisfactory from those media, nothing personal whatever was contemplated by us, in electing to make a dignified presentation of the Micro-Dynameter to the medical profession before the Inter-State Postgraduate Medical Assembly, and in *Clinical Medicine and Surgery*."

There seem to be two obvious implications in this paragraph: First, that the American Medical Association in its official organ had carried advertisements of some of the preposterous devices exploited by the Electronic Research Laboratories or the Ellis Research Laboratories; second, that the recent article by the Bureau of Investigation on Micro-Dynamics was prompted by pique because Ellis did not advertise in THE JOURNAL. The answers to these implications are, first, that THE JOURNAL never advertised any of the fantastic devices dealt with in the Micro-Dynamics article, and second, that Mr. Ellis couldn't get into the advertising pages of THE JOURNAL at any price.

It is a fact that a *carbon arc lamp* put out by the Ellis Manufacturing Company was advertised in a few issues of THE

JOURNAL between March 24 and June 30, 1928. This was during the period that the Council on Physical Therapy had the lamp under investigation. When the Council completed its investigation of this lamp, however, it declared the device "unacceptable and "the policy of the company" which put it out "detrimental to public welfare." After Mr. Ellis had received the Council's unfavorable report, he first wrote cancelling his contract—which was unnecessary—and then asked to withdraw his cancellation and be permitted to continue to advertise. He was told that his advertising was not acceptable to the pages of THE JOURNAL!

But the present article is not concerned with Micro-Dynamics or with Mr. Ellis, but rather with a practitioner of Micro-Dynamics and his professional methods. The matter was brought to the attention of the Bureau of Investigation by the Better Business Bureau, Inc., of Indianapolis which, after receiving the tear-sheets of the Bureau of Investigation's article on Micro-Dynamics, wrote as follows:

> "In a recent tear-sheet we noticed an article on Micro-Dynamics. We are enclosing an advertisment which appeared in a local newspaper and was inserted by C. R. PerDue, M.D., a doctor with whom you are no doubt familiar, for your opinion."

It should be said in explanation that each week the Bureau of Investigation sends to every Better Business Bureau in the country, including the national organization, tear-sheets from THE JOURNAL containing articles prepared in the Bureau of Investigation and dealing with persons, products or methods of dubious scientific standing. The advertisement that the Indianapolis Better Business Bureau sent with the letter just quoted is reproduced in miniature with this article.

C. Roland PerDue, according to his stationery, is a "Dermatologist, Plasto-Cosmetic Surgeon" who has an office in the State Life Building in Indianapolis, Ind. His stationery also carries the statements: "X-ray Therapy; Quartz Light Therapy; Electro Therapy; Skin Lesions; Facial Blemishes; Facial Surgery."

About the middle of December Dr. PerDue wrote to the Bureau of Investigation of the American Medical Association as follows: "Please give me information regarding the Ellis Micro-Dynameter as advertised in *Clinical Medicine and Surgery*." As an article on Micro-Dynamics was in preparation and as the Bureau of Investigation had long had Dr. PerDue's name in its files, it was assumed, justly or unjustly, that the inquiry was not written in good faith, and it remained unanswered until the article on the Micro-Dynameter was published, at which time Dr. PerDue was sent pages from THE JOURNAL containing the article.

The files of the American Medical Association have long contained material on Dr. C. Roland PerDue including several clippings from Indianapolis newspapers in which his name appears. According to the records, he was born in 1874 and holds a diploma issued by the Central College of Physicians and Surgeons, Indianapolis, in 1897. He has an Indiana license granted in 1903.

In THE JOURNAL for Nov. 29, 1924, under "Indiana News," it was reported that a jury in the Superior Court of Indianapolis awarded one William A. Trainor $2,250 damages against Dr. C. Roland PerDue, who was reported to have operated on Trainor's face. Trainor had alleged that PerDue ruined his appearance and health by injecting paraffin.

In 1928 a woman living in Indianapolis wrote to the American Medical Association stating that she had read an article in a lay magazine suggesting that persons who were considering taking X-ray treatment for the removal of superfluous hair write to the Association before undergoing such treatment. The woman then went on to state:

> "I went to Dr. C. Roland PerDue, Plasto-Cosmetic Surgeon, 411 State Life Building, this city, expecting to take the Tricho treatments, which he has been giving about ten years."

Readers of this department of THE JOURNAL may remember that an article was published in the issue of Jan. 19, 1929, detailing the viciousness of the Tricho System of depilation. This article was later reprinted in extended form detailing a large number of additional cases of X-ray burns following the use of this method.

In 1931 the state medical authorities of California reported that Orin Joslin, the quack who dabbled in such fakeries as "Intermittent Chromatic Radiant Ray," the "Bio-Dynamo-Chromatic" charlatanism and various other fads, was in California using a marvelous machine that he called the "Etheric Animator." This device was said to be the reincarnation of the "Bio-Tactos" which he used when he was in the east, before he was arrested by the authorities of New York and run out of that state. Joslin was arrested in California, and in an attempt to emphasize his respectability, it was reported that he showed the authorities a letter from C. Roland PerDue, M.D., 411 State Life Building, Indianapolis, endorsing Joslin and his methods.

In August, 1931, the Department of Public Health of the State of Illinois reported to the Bureau of Investigation that C. Roland PerDue of Indianapolis was using the Hoxsey "cancer cure." That PerDue dabbled in this form of quackery is evident from advertisements that appeared a year later (in 1932) in a Wheeling, W. Va., paper at the time that Hoxsey was working his quackery at Wheeling. In this advertisement it was stated that a group of Wheeling citizens took an automobile trip west with Hoxsey to visit what they called the Hoxsey Clinics located in various cities. One of the stops, according to the story, was in Indianapolis. To quote:

> "On the way back we stopped at Indianapolis and interviewed Dr. C. Roland PerDue, who maintains a clinic for Mr. Hoxsey and himself."

In 1932 a piece of advertising was put out by a concern known as the Institute of Aetheronic Therapy, which had one "Dorr Eldred Wood, LL.B., D.O., O.D., M-T.D., D.C., M.D." for its "director." The "Aetheronics" method of treatment was said to be by radio—a sort of mechanized Christian Science absent-treatment. In the booklet already referred to there were quoted what purported to be the opinions of a number of physicians on the virtues of Aetheronics. One of these was credited to C. Roland PerDue, M.D., 411 State Life Building, Indianapolis.

In 1933 PerDue, according to information received, had joined the ranks of those faddists who would have one believe that the use of aluminum cooking utensils produces dire results, from what is loosely described as "stomach trouble" to cancer.

In 1934, as the advertisement which we reproduce shows, Dr. PerDue is exploiting the mysteries of Micro-Dynamics. This seems to be a fitting consummation to the doctor's previous professional record.

Correspondence

BIOCHEMORPHIC VERSUS CHEMO-PHARMACODYNAMIC

To the Editor:—I have read with great interest the admirable address of Prof. C. D. Leake on "The Rôle of Pharmacology in the Development of Ideal Anesthesia," published in THE JOURNAL, January 6. To me, one of the most interesting parts of this paper is the first footnote, in which Dr. Leake suggests the coining of a new word, "biochemorphic." Devotees of the basic medical sciences, and particularly of pharmacology, should be grateful to Dr. Leake for emphasizing one of the most important aspects of pharmacology—in my opinion, the most important aspect of that science—namely, the relationship between the chemical constitution or structure (including physical properties) and the physiologic or biologic effects of drugs. This is a field in which I have been active in a modest way, and in connection with my work I have often felt the greatest need of an adequate term, substantive and adjective, which would succinctly convey this idea of relationship between chemical structure and pharmacologic action. The word "bioche-

morphic," proposed by my friend Professor Leake, does not seem to me satisfactory. To begin with, the first component of the word "biochemorphic" is somewhat redundant, as the term "chemical" without the prefix "bio" would more accurately express the idea intended. There is no longer any distinction made between chemical compounds, inorganic, organic or biochemical. More unsatisfactory is the second component of the word "biochemorphic," which conveys no idea regarding the functional or physiologic response of a living test object to the action of a chemical compound; and yet it is this physiologic effect of chemical groups in which we, as pharmacologists, are primarily interested. The physiologic effect of chemicals, or their "drug" action, is often spoken of as pharmacodynamics; and for this reason, on sound philological grounds, as well as in the interest of scientific accuracy, I have applied to the particular subject under discussion—that is, to the relationship of chemical structure to pharmacologic action—the term chemopharmacodynamics and the adjective derived therefrom, chemopharmacodynamic. Thus, for instance, the title of a recent paper by Macht and Harden in the *Journal of Pharmacology and Experimental Therapeutics* (67:377 [April] 1933) is "Comparative Pharmacology of Some Condensation Products of Phenols with Aliphatic Aldehydes: An Inquiry into Chemopharmacodynamic Relationships." Again, in the *Journal of Pharmacology and Experimental Therapeutics* for January 1934, the title of a paper by Macht and Davis reads: "Toxicity of Alpha- and Beta-Nicotines and Nornicotines: An Inquiry into Chemopharmacodynamic Relationships." Although rather clumsy and excessively long, this word, in my opinion, does express more accurately the idea Dr. Leake intends to convey. The old word "chemotherapy," as employed by Ehrlich in a very restricted sense, is being slowly extended to denote and connote much more than is comprehended in *therapia sterilisans magna*. There is no valid reason in modern experimental therapeutics for not applying the term chemotherapy to every clear-cut pharmacologic effect produced by a definite chemical compound on a specific physiologic function; and this is the sense in which the word is employed by modern investigators as, for instance, in the "Handbook of Chemotherapy," by Fischl and Schlossberger, the first volume of which has recently been translated into English by Schwartzman (H. G. Roebuck and Son, publishers, Baltimore).

DAVID I. MACHT, M.D., Baltimore.

USE OF OPIUM IN THE COMMON COLD

To the Editor:—It might be of interest to the readers of THE JOURNAL to know that De Quincey made somewhat the same observations as were mentioned in the article on the medicinal treatment of the common cold, by Diehl (THE JOURNAL, Dec. 23, 1933, p. 2042).

Concerning the use of morphine and its effect on acute colds, sometime about 1800, he said: "It is remarkable, also, that during the whole period of years through which I had taken opium, I had never once caught cold, as the phrase is, nor even the slightest cough." After stopping the use of morphine, he wrote: "Now a violent cold attacked me, with a cough soon after."

This quotation is from De Quincey's "Confessions of an English Opium Eater," published by the Internationale Bibliothek Berlin West 66, volume 9, page 292, and was called to my attention by the head nurse at the Murphy Memorial Hospital in this city, Miss Mary L. Wright.

M. F. MCCARTHY, M.D., Cincinnati.

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

TOXICITY OF CINCHOPHEN

To the Editor:—I have a patient, a man, aged 55, who was suffering from lumbago and for whom I prescribed atophan, four tablets a day. Suddenly he developed a severe urticaria, with swelling of the wrist joints. A few days later typical joint pains set in and the temperature was 101 F. Was this all a typical reaction from atophan, or might it have been inflammatory rheumatism? I felt that the urticaria and swelling could be explained on that basis, but the joint pains, which have persisted, have puzzled me. Are atophan and cinchophen identical in their action and toxicity? WILLARD P. BOWSER, M.D., Berea, Ohio.

ANSWER.—Cinchophen is the U. S. P. name for the product originally introduced under the trade name Atophan. Atophan costs much more than the identical substance sold as cinchophen. Similarly, neocinchophen (ethylmethylphenylquinolincarboxylic acid) is sold under trade names of "tolysin" and "novatophan."

In gout, cinchophen or its derivatives frequently are highly effective. In chronic arthritis or acute rheumatic fever, arthralgias and myalgias these products are seldom as effective as the salicylates. In the last few years, clinical data have accumulated to indicate that cinchophen is a very toxic drug, causing serious damage, particularly to the kidneys and liver. Numerous instances of injury to the liver, ranging from mild jaundice to fatal acute yellow atrophy, have been reported. Many physicians have ceased the use of this drug entirely. Allergic reactions of the nature of urticaria, dermatitis, abdominal pain and joint pains occur fairly frequently. In the latter respect this reaction does not differ from that of many other drugs, such as the salicylates.

In the particular case cited in the query, the symptoms of joint pains, urticaria and fever speak for an allergic reaction. In all probability this was due to the atophan. It is also possible for an allergic response of this type to occur as a result of bacterial allergy, such as streptococcic sore throat. The details of this case would justify the suspicion that the probable course of events were: first, an allergic reaction due to atophan, followed by an arthritis of infectious origin, which had been in the process of developing.

INFECTION WITH TUBERCULOSIS

To the Editor:—I was taught that a tuberculous infection in older adults, say 40 years of age or more, is the result of infection received in infancy, harbored all this time but unable to develop until body resistance happens to be lowered, as following some intercurrent ailment. Is this theory exploded? Please explain briefly the latest theory on tuberculous infections and give reference books or articles. Please omit name. M.D., Iowa.

ANSWER.—Probably many of the tuberculous infections manifested by positive tuberculin reactions in adults of 40 years or more were contracted in infancy or childhood. However, it is also possible that the individual received his first infection during a subsequent year of life. Forty years or more ago, little was done to prevent infants and children from becoming contaminated with tubercle bacilli.

Today the number of open foci of tuberculosis, both in cattle and in man, is relatively small. Area testing of cattle and slaughter of the positive tuberculin reactors has greatly reduced the possibilities of contamination of infants and children with the bovine type of tubercle bacilli. Moreover, pasteurization ordinances in cities have been effective. The reverse was true forty years ago. Large numbers of human cases of tuberculosis have been isolated; many of these persons have been taught how to prevent the spread of their bacilli, and recent advances in collapse therapy have closed off many lesions, so that they do not disseminate tubercle bacilli. Isolation was not practiced on a large scale, and the present-day methods of treating pulmonary tuberculosis by collapse therapy, such as artificial pneumothorax, phrenic exeresis and extrapleural thoracoplasty, had not been introduced in this country forty years ago. Therefore, large numbers of infants and children were contaminated with both the human and the bovine type of tubercle bacilli formerly, whereas today in many communities the vast majority do not become contaminated until adult life is reached. Many may even pass through adult life without infection.

The first infection with tubercle bacilli is tolerated well by the human body. In fact, it brings the vast majority of the

lesions produced by the first infection under control without the appearance of any outward manifestations of tuberculosis. If the person is adult, he apparently develops the same benign first infection type of disease as he would have from infection in infancy or childhood. As the first infection type of lesion develops, the tissues of the body become sensitive or allergic to the protein fraction of the tubercle bacillus and thereafter react positively to tuberculin which contains this fraction. It is possible that allergy may eventually disappear in some individuals, but the percentage is not known. Unfortunately, this allergy, like allergy to ragweed pollen, makes further exposure dangerous to the individual, whether an infant, child or adult. While he may be able to tolerate some exposure to tubercle bacilli, just as the hay fever patient may tolerate some ragweed pollen, he falls ill from a clinical type of tuberculosis if the exposure is too great.

The ultimate goal is to reduce the number of foci of tuberculosis so that the vast majority of people will pass through infancy, childhood and even adult life without contamination. It is becoming possible to avoid outside sources of exposure to tubercle bacilli, but unfortunately the bacilli which cause the first infection type of disease often remain alive and virulent in the original focus and in the regional lymph nodes over a long period, even for the lifetime of the individual. These at any time may escape into the blood stream, the bronchial tree or elsewhere and set up a reinfection type of tuberculosis. It is not known why these bacilli escape in some cases and not in others; that is, why the caseous material burrows into a blood vessel or a bronchial ramification in one case and not in another. In any event, once tubercle bacilli are allowed to enter the body and set up foci of disease, thereafter one is at their mercy. The fortunate fact is that the capsules surrounding them are adequate in the majority of cases.

PROSTATITIS AND PROSTATIC HYPERTROPHY

To the Editor:—A white man, aged 27, married, seen Oct. 11, 1933, suffered from weak and dizzy spells almost every day, and sometimes several times a day. He has had these attacks on and off for the past three years, but they had been getting worse for the three weeks previous to his coming to see me. The attacks consist of feeling vertigo for a few minutes, with black spots in front of the eyes. Then he feels weak. He has never fainted or felt nauseated. He went to a physician two and one-half years ago, who informed him that he had an enlarged prostate, and he had the prostate massaged a few times but soon gave this up. He had had an occasional feeling of fulness in the perineum. He also has frequency of urination in the morning. The appetite and bowels are normal. There is no discharge from the urethra. I examined him and could find nothing wrong except an enlarged prostate gland, more than twice the normal size, the right lobe being much larger than the left. The gland was rather sensitive to pressure of the finger. Urinalysis gave normal results. The blood pressure is 125 systolic, 70 diastolic. I have continued to massage the prostate at intervals of four days since. The patient appears to be improving; the frequency of urination has disappeared and he is able to begin urination without any delay. However, the prostate is still enlarged and is still somewhat tender to the touch. It has improved somewhat in these respects but not sufficiently to make me feel satisfied. Besides massage I have passed sounds through the urethra and have also instilled weak silver nitrate solutions into the prostatic urethra. There is no history of gonorrhea or any other veneral disease. I am at a loss as to how to explain the chronic prostatitis. The only fact I can lay my hand on is that the patient told me he had a prolonged engagement with his wife, whom he married about three years ago. This engagement lasted about three years, and he was constantly aroused sexually without gratification. Can this be a cause of chronic prostatitis? I would appreciate your telling me of a plan of treating an enlarged prostate such as this. Will you be good enough to tell me also whether I can expect to reduce the size of the gland?

M.D., New York.

ANSWER.—The attacks of vertigo, with black spots in front of the patient's eyes, are probably not due to disease in the prostate gland. They may be due to migraine, petit mal or some disturbance of the eyes, and this part of his complaints should be investigated by a medical man or an eye man or both. The fulness in the perineum and the frequency of urination are best explained by the presence of the enlarged prostate.

It is not quite clear from the evidence submitted whether the enlargement is due to a chronic prostatitis or to a congestion of the prostate, since no information is given regarding the character of the prostatic strippings. If a microscopic examination of the prostatic strippings shows the presence of pus, the diagnosis of chronic prostatitis is justified.

Chronic prostatitis may be due to many causes other than gonorrhea, such as a metastatic infection of the prostate from acute grip or acute tonsillitis, and occasionally from chronic foci of infection, such as the teeth and sinuses. If the patient has chronic prostatitis, it might be well to advise the use of heat by rectum by means of a prostatic heater, either an electric heater or the hot water heater; or one may resort to hot rectal irrigation or sitz baths. In this particular case it might be advisable to discontinue the use of silver nitrate. The massage may be given twice a week and, later on as improvement sets in, once a week, and finally every ten days until the strippings are free from pus on microscopic examination.

On the other hand, the enlargement of the prostate may be due to bad sexual relations, such as prolonging the act or withdrawing without ejaculation. Bad sexual hygiene is suggested in this case by the statement of the long engagement with much sexual excitement and no sexual gratification. Bad sexual practices often lead to serious prostatic disturbances. If the enlargement in this case is due to any one of these causes, it must be corrected.

If the patient's prostatic enlargement is due either to chronic prostatitis or to bad sexual hygiene, the size of the prostate will return to normal with the treatment that has been outlined.

Finally, if the treatment as outlined fails to relieve the patient and the prostate does not return to its normal size, one must think of the possibility of some unusual lesion of the prostate, as, for example, a sarcoma, because of the age of the patient and failure of treatment.

STERILITY—DYSMENORRHEA—PRURITUS VULVAE

To the Editor:—1. A woman, aged 36, married for sixteen years and sterile, had a dilation and curettage eight years ago without relief of sterility or dysmenorrhea (the patient has low abdominal cramps the first day and flows three days). Physical examination reveals a projection from the anterior lip of the cervix the size of an orange seed and of the same color and consistency as the remainder of the cervix. The uterus is acutely anteflexed. How should this small projection be removed for biopsy? Are there any other procedures that would help the sterility and dysmenorrhea other than dilation of the cervix? 2. The patient has had marked intermittent pruritus vulvae for eight years and occasional burning micturition. The urine is normal except for high specific gravity (1.030) and a pink dusty sediment consisting of the urates. The vulva shows many fine fissures and abrasions from scratching. How could the uric acid sediment be decreased or eliminated? The patient consumes about half a pint of alcoholic liquor during the week. Should this be eliminated? The pruritus is relieved by a cleansing douche for about twenty-four to thirty-six hours, but there is no vaginal discharge. Does this suggest anything as to etiology? Please omit name and address.

M.D., Massachusetts.

ANSWER.—1. The growth on the cervix may be a small fibroid, a malignant growth or a benign tumor resulting from manipulation with a tenaculum. The correct diagnosis in most of these conditions can usually be made with the naked eye but, regardless of this, the entire mass should be removed. This may be done with a sharp knife or an electrical cautery but, regardless of which method is used, the incision for removal should be made at least one-eighth inch all round the mass. In steadying the growth during its removal, one should not use an instrument that will crush it, even lightly. Allis forceps are suitable for holding the mass. After removal of the tumor with a knife, it is nearly always necessary to suture the edges of the cervix; but if the cautery is used, this is generally not needed. The tumor should, of course, be subjected to microscopic examination without delay. Most likely the projection is a benign one due to manipulation of an instrument such as a vulsellum or tenaculum. Usually these nodules are cystic and contain blood. They frequently are mistaken for carcinoma, especially because they may recur after removal.

Sterility, dysmenorrhea and pruritus vulvae are the three most baffling problems in gynecology and all usually require intensive study. In the cases of sterility and dysmenorrhea this includes not only a careful physical examination but also an investigation of the patient's past history. The combination is frequently found in women who have underdevelopment of the uterus. For the relief of the sterility it is essential to be certain that the husband's spermatozoa are satisfactory from the point of view of number, motility and normal contour. If the semen examination is satisfactory and no abnormalities are found on bimanual examination of the woman, a Rubin tubal insufflation test should be performed. This test often relieves dysmenorrhea. If the tubes are impermeable to gas, especially on repeated examinations and after the use of atropine to relax a possible spasm of the uterotubal junctions, iodized oil should be used to determine the site of obstruction. If a block is found, an operation may be performed to relieve this; but the chances for a pregnancy are not good, especially in a woman 36 years old who has been sterile for sixteen years. If the tubes are patent, it may be necessary to regulate the diet of both the wife and the husband, to explain the most favorable time for conception, and to give other information. Recently endocrine preparations have been used successfully in some cases of dysmenorrhea and sterility but thus far the results have been too inconstant to recommend them.

2. Evidently the pruritus of the vulva in this case is not serious or it would have been associated with marked and perhaps ominous changes in the vulva and labia after a period of eight years. Stubborn itching in this region is frequently associated with leukoplakia, which in many cases leads to the development of carcinoma. Since examination of the urine is negative, diabetes may be ruled out. Since there is no vaginal discharge, Trichomonas vaginalis and monilia may be eliminated as causes. However, because douches give relief, a hanging drop examination should be made of some of the vaginal secretion and, if any abnormal organism is found, appropriate treatment should be instituted. Alcohol should be eliminated for a time to see what effect this will have. Simple cleansing with a mild soap and water may suffice to give relief and the occasional local application of a weak silver nitrate solution may help.

GRANULOMA INGUINALE AND LYMPHOGRANULOMA INGUINALE

To the Editor:—Please enlighten me on the differential diagnosis, etiology, pathogenesis, treatment and prognosis of granuloma inguinale (Donovan bodies) and lymphogranuloma inguinale (Frei test). The more I read the current literature, the more confused I become. Please omit name.

M.D., New York.

ANSWER.—Granuloma inguinale and lymphogranuloma inguinale have but two points of resemblance. They are both classed as venereal diseases and, unfortunately, they have names that are so much alike that they are confusing. Otherwise the diseases are totally dissimilar.

Granuloma inguinale is due to inclusion bodies, at present called Donovan bodies. There is some discussion in regard to what these inclusion bodies are, but, for the purposes of a short reply, the use of the term Donovan bodies is sufficient.

Lymphogranuloma inguinale, on the other hand, is due to a filtrable virus that can be transferred to several of the lower animals by way of subdural injections, causing an encephalitis. The incubation period of lymphogranuloma inguinale is from one to two or three weeks. The exact incubation period for granuloma inguinale is not exactly known but probably varies from a few weeks to a month.

With lymphogranuloma inguinale there may be a primary lesion of the type of a papule, of a pustule, of herpetic process, or of a specific urethritis, which may be confused with gonorrhea. Following this primary lesion, which is usually evanescent in character, there is an involvement of the draining lymph nodes. The adenitis of lymphogranuloma inguinale is characteristic. The nodes in a chain become fused together in a large mass, which may reach half the size of a fist, and then the process breaks down with multiple fistulous openings. Along with the local adenitis there may be systemic symptoms of malaise, loss of appetite, loss of weight, rheumatic symptoms, eruptions on the skin, and a temperature elevation which may be of the intermittent, remittent or continuous type. Occasionally the elevation of temperature will persist over a long period, successive flare ups accompanying the involvement of fresh lymph nodes.

In the female affected with lymphogranuloma inguinale the picture may be somewhat different, owing to the fact that most of the lymph channels running from the vulva drain into the nodes around the lower part of the rectum, resulting in an inflammatory reaction of these nodes and a secondary involvement of the rectal wall. It has been found that certain of these female cases, as a result of the local process, later present an inflammatory stricture of the lower rectal walls, which may be annular or tubular in character. Rarely in a female, along with a stricture of the rectum there may be excrescences developed round the anal orifice, sometimes accompanied with fistulas, and there may also be more or less elephantiasis of the vulva and fistula formation going under the term "esthiomene."

Clinically there should be no difficulty in making a differential diagnosis between granuloma inguinale and lymphogranuloma inguinale. Lymphogranuloma inguinale is essentially a disease of the lymph channels and of the lymph nodes, while granuloma inguinale is a disease affecting the skin itself; there is never an involvement of the lymph nodes in granuloma inguinale. In the latter disease one finds a beefy red, generally somewhat raised, rather rugose, moist proliferation of the tissues, which is most characteristic in appearance. Instead of spreading by the lymph nodes, the disease spreads by contiguity and may spread by contact from the genitalia to the inside of the thighs. Or the process may spread from the genitalia down over the perineum and perhaps up into both groins by way of the skin. At no time, however, will there be an involvement of the nodes themselves. As a rule, there are no systemic symptoms in connection with granuloma inguinale. One is assisted greatly in making a diagnosis of granuloma inguinale through making a smear from the local inflammatory tissue or removing a specimen of the tissue and making a smear on a glass slide with the undersurface of this tissue, the same as one would make a blood smear. The slide is then stained with either Giemsa's stain or Wright's stain, and specific Donovan inclusion bodies will be found, though probably with some difficulty unless the physician is accustomed to the microscopic picture. One is assisted in making a diagnosis of lymphogranuloma inguinale by the so-called Frei test. This is a specific intradermal test performed the same as one makes a tuberculin test. The antigen consists of some of the sterilized pus taken from a bubo just before it is going to break down. Naturally, a test could not be made with pus taken from the patient who is to be tested. One-tenth cubic centimeter of this material is injected intradermally, and in forty-eight hours there will be a raised, erythematous tubercle, from 0.5 to 1 cm. in diameter, in a positive case.

The prognosis and outlook in either of these diseases is somewhat guarded, owing to the fact that in granuloma inguinale there is such a frequent tendency for recurrence and that in lymphogranuloma inguinale one of the serious complications, such as stricture of the rectum, may result before the disease is finally cured. It is true, however, that once lymphogranuloma inguinale is cured the patient ordinarily has no further difficulty, and it is a question whether he is not immune for the rest of his life. Strangely enough, antimony seems to be the best preparation for treatment of either of these diseases. In the past this has been used in the form of antimony and potassium tartrate, a 1 per cent solution being employed and an injection given intravenously of 3 cc. plus 7 cc. of saline solution. The antimony and potassium tartrate is stepped up 1 cc. at a dose, the injections being given once in three or four days until a maximum dose of 10 cc. of the 1 per cent solution is given, and this may be continued for ten to fifteen or more injections, the kidneys being watched for evidence of irritation. Recently a new antimony preparation, Fuadin, has come on the market (THE JOURNAL, May 27, 1933, p. 1685). Fuadin is much easier to administer, since it may be given intramuscularly and with little discomfort to the patient. The injections are given once in two or three days, starting with a dose of 2 cc. and working up to a maximum dose of 5 cc., a total of from 45 to 50 cc. of the preparation being given, which constitutes a course. A course may be repeated within a month if found necessary. With a case of lymphogranuloma inguinale, rest in bed is quite essential, and it may be necessary that some minor surgical procedure, such as opening necrosing lymph nodes, or even partial removal of a broken down lymph node, may be necessary.

CYANOSIS OF FINGER NAILS

To the Editor:—In what conditions other than cardiac decompensation and pneumonia is cyanosis of the finger nails of clinical significance? Please omit name.

M.D., Pennsylvania.

ANSWER.—Cyanosis of the finger nails may be part of the picture of general cyanosis on the basis of inadequate oxygen saturation of the blood, or it may result from various types of local venous stasis.

General cyanosis is often the result of disease of the oxygenating organs; i. e., the lungs. In this event, sufficient oxygen is not available to the blood. In addition to the acute conditions mentioned, certain chronic diseases in various stages of their evolution exhibit more or less cyanosis. Examples of this group include hypertrophic emphysema, chronic bronchitis, bronchial asthma, pulmonary neoplasms and sclerosis or syphilis of the pulmonary artery and its branches, or Ayerza's disease.

Cardiac decompensation and other conditions, occasionally hypertension with early left ventricular failure, result in pulmonary stasis. Congenital malformations of the heart or great blood vessels with shunt of the blood flow in part past the lungs will result in inadequate oxygenation and cyanosis.

In many of these conditions, compensatory types of polycythemia occur in the effort to supply greater oxygen-carrying capacity to the blood for the existing oxygen want. This only results in incomplete oxygenation of a greater amount of hemoglobulin. Likewise, such diseases of the blood as polycythemia vera cause cyanosis, because the total amount of hemoglobin is so great that it cannot be completely oxygenated. Cyanosis is but rarely seen in severe anemia.

Intoxication often results in stable compounds of hemoglobin, which cannot be readily oxidized. Poisoning with gaseous compounds of sulphur, particularly hydrogen sulphide, with the formation of sulphemoglobin, show marked cyanosis. Acetanilid

poisoning is another common example of cyanosis of this type. Carbon monoxide is a similar poison, but instead of cyanosis the color imparted to the skin is a cherry red; cyanosis may occur. Likewise, asphyxia by inert gases or tracheal obstruction may cause temporary cyanosis. Carbon dioxide and nitrogen compound gases are examples.

Local venous stasis involving the upper extremities may occur as the result of pressure on the veins from extravascular causes, of which mediastinal tumors or aneurysm interfering with the flow of blood in the superior vena cava is an example. Intravascular causes are arteriovenous aneurysm, thrombosis and thrombophlebitis.

In functional circulatory disorders such as the stage of asphyxia in Raynaud's disease, cyanosis is present. It also occurs in acrocyanosis, for which Layanyi believes that a functional stasis in the venules is responsible. The hands are involved; they are cold and moist and purplish red rather than a definite blue.

TREATMENT OF GONORRHEA

To the Editor:—I have under my care a young graduate nurse who says that she has had a profuse purulent vaginal discharge for at least six months. The smear is positive for gonococci. The vaginal mucosa is intensely inflamed looking, while the membrane covering the cervix looks as though it were absent entirely, with a raw looking surface, which bleeds easily. There is a purulent looking discharge oozing from the urethra, although the patient says it is only rarely that she has any discomfort on urinating. Besides this she has a four plus Wassermann and a positive Kahn reaction. In regard to the treatment of this case, "to douche or not to douche," if so, with what solution? Vaccines for the gonorrheal infection? Any injections into the urethra while the discharge is so profuse seems too dangerous. She has no symptoms from her syphilis that I can find except palpable inguinal and epitrochlear glands. There is no history of chancre or indolent sore. There is no eruption. Please give as full directions as possible for the latest treatment for both these conditions, and any special treatment for the combination, if there is such. The patient is busy most of the time. How about her resting? How many intravenous treatments would she have before she takes another case in justice to her patients? Also please omit name if you answer this in THE JOURNAL.

M.D., Pennsylvania.

ANSWER.—It is not stated whether there is palpable evidence of infection of the upper pelvic zone, so it is assumed that the tubes and ovaries are normal.

Active antisyphilitic treatment should be instituted at once. It will be impossible to determine how much of the trouble is ascribable to gonorrhea until the results of antisyphilitic treatment are evident. Rest in bed is almost imperative.

There is no great objection to douches in a case such as this, provided the douches are given gently, without undue force. It should be understood, however, that douches have little therapeutic value. They are of help chiefly in keeping the parts clean and in making the patient more comfortable. The Elliott method (Holden, F. C., and Gurnee, W. S.: *Am. J. Obst. & Gynec.* **22**:87 [July] 1931) would probably be beneficial in this case; but, if used, great care will be required to avoid heat sufficient to produce necrosis.

In general, nonsurgical care of the gonorrheal infection is indicated, at least until all active symptoms have subsided. But search should be made for hidden foci of infection, particularly pus pockets in Skene's ducts and blocked drainage from the cervix. (Passage of a dilator beyond the internal os in a patient with such virulent infection of the lower genital tract is rather hazardous.)

The value of specific therapy has not yet been demonstrated. Despite the fact that use of vaccines and the injection of sterile milk and other foreign proteins have many warm advocates, the efficacy of these remedies is open to serious question.

POISONOUS SAFETY MATCHES

To the Editor:—I note that in 1913 an act was passed placing a prohibitive tax on poisonous matches. Several cases have come to my notice lately of infants eating the heads of both safety matches and of the self-igniting sorts. Are there any poisonous matches obtainable at retail? How many match heads may be safely consumed by a year old infant?

S. A. BRITTEN, M.D., Syracuse, N. Y.

ANSWER.—The elimination of white phosphorus from the match industry in this country went far toward protecting the match maker against industrial poisoning but by no means freed the public from the dangers following the ingestion of match heads.

Phosphorus is not the only toxic agent entering some matches, and certain instances of poisoning must be attributed to other constituents, such as antimony compounds. Safety matches are likely to contain phosphoric acid, sulphur, potassium chlorate, zinc carbonate, antimony compounds, powdered glass, and glue. The striking surface may contain red phosphorus.

At the present time "strike anywhere" matches are likely to contain phosphorus sesquisulphide along with potassium chlorate, zinc oxide, ochre, powdered glass, paraffin and glue.

Red phosphorus and the sesquisulphide may retain some white phosphorus as an impurity (0.6 per cent). Although the tax regulation of 1913 practically eliminated the use of white phosphorus, it cannot be said that all exposure has been eliminated.

Tourists returning from Europe may innocently bring with them casual supplies of matches from countries tolerating the use of white phosphorus.

In a standard work on toxicology in this country, published in 1923, the following statement is found: "The Lucifer matches commonly sold are tipped with waxy or poisonous phosphorus mixed with potassium chlorate, sand and glass; but the safety match is tipped with potassium chlorate and antimony sulphide, without phosphorus."

Poisoning after ingesting safety matches is probably traceable to antimony. Cases from "strike anywhere" matches are probably traceable to phosphorus sesquisulphide or to white phosphorus present as an impurity.

No match heads can be safely consumed by a year old infant. Two match heads ingested by a child are said to have caused death. This low figure should not be accepted as necessarily dangerous, as other instances are known wherein scores of matches were sucked or ingested without fatal results.

UROTEX

To the Editor:—What is Urotex? I assume you have others of this same company. However, I am enclosing one of the many sheets I have received from this particular company.

M.D., Seattle.

ANSWER.—Enclosed by our correspondent was a carton for "Urotex," together with a circular letter addressed to the physician asking for case reports. According to the formula on the label, Urotex consists of two tablets, A and B. The formula for tablet A (gray) is as follows:

Hexamethylenamine	2½ gr.
Ext. Nux Vomica	⅛ gr.
Acid Benzoic	½ gr.
Atropine Sulphate	1/200 gr.
Excipients and coating	q. s.

The formula for tablet B (brown) is as follows:

Ext. Buchu 1-4	½ gr.
Ext. Corn Silk 1-5	¼ gr.
Ext. Triticum 1-3	½ gr.
Pot. Bicarbonate	1 gr.
Sodium Borate	½ gr.
Caffeine	1/16 gr.
Atropine Sulphate	1/200 gr.
Excipients and coating	q. s.

These formulas, of course, are an insult to the intelligence of the medical profession. They represent the shotgun type of proprietary sold to physicians in the period preceding 1906, except that the composition appears on the label.

The carton also contains therapeutic recommendations, so that the physician who prescribed the product would simply be serving as an advertising tool in the hands of the manufacturer.

The product has not been submitted to the Council on Pharmacy and Chemistry for consideration. It goes without saying, however, that the Council would not approve such a product.

The circular letter addressed to the physician is an imposition and an affront. Note the following paragraphs, for example:

"I would like to have 100 case reports on Urotex to report to physicians of your state. So far I have 37 reports from your state. . . . I would like to have 63 more.

"That brings me to the favor I have to ask of you. I would just like to have you tell me what results you have had with Urotex. (Your name will be held in confidence, if you desire.)"

Surely thinking physicians would not permit their names to be used in the promotion of such an unscientific mixture.

PHOTOSYNTHESIS

To the Editor:—I have been searching for an explanation of the process of photosynthesis. There are several theories, which are not convincing. The subject is either sidestepped or ignored by such authors as McCollum, McLester, Sherman, Parsons and Lusk. Will you kindly give me the latest information on the subject and state which theory is considered the most tenable?

N. PHILIP NORMAN, M.D., New York.

ANSWER.—There are no theories which adequately or in accepted detail explain the processes of photosynthesis in plants or, for example, the mechanism whereby certain substances may become possessed of antirachitic power by ultraviolet irradiation. Probably it is the formation of vitamin D from the ergosterol in the skin that accounts for the antirachitic action

of ultraviolet rays. In the light of modern theories of matter and energy (Einstein, Planck and Bohr) it is postulated that the absorption of energy produces changes in either electronic or molecular activity. Probably before any reaction of this character can take place the substances taking part in it must acquire a certain amount of extra energy. The activated molecules do not lose their energy increment on combining but produce an activated compound that is capable of imparting its energy to other molecules. Inert molecules are closed systems; energized atoms and molecules are systems that are opened up and react. Fundamentally the activation of inert atoms and molecules may be conceived of as being due to radiant energy, which, when absorbed, ionizes or energizes atoms (that is, either causes an addition or subtraction of an electron or changes the energy level of an electron according to the Bohr theory), initiates chemical reactions or so changes molecular configurations as to endow them with new activities or properties.

URTICARIA AFTER USE OF PITUITARY PREPARATION

To the Editor:—I have a patient who apparently had an endometrial hyperphasia and who was treated with Antuitrin-S with complete relief. Following the last injection about three weeks ago she had apparently a redness around the site of the injection. This was followed about two days later by giant urticaria, which has persisted, clearing and recurring every day. I have treated her by hypodermic injections of epinephrine, 8 minims (0.5 cc.) twice daily, along with three-eighths grain (0.025 Gm.) of ephedrine three times daily. Could you suggest more efficient therapy? How much longer is it possible for this annoying condition to exist? Would theelin or any other ovarian preparation be indicated? Please omit name.

M.D., California.

ANSWER.—The urticaria is most likely due to some substance in the "Antuitrin-S" to which the patient is hypersensitive, or to some product produced by the Antuitrin-S at the site of injection. The Council on Pharmacy and Chemistry has accepted no "ovarian" preparation (See report on Estrogenic Substances: Theelin, THE JOURNAL, April 29, 1933, p. 1331). The manufacturers of Antuitrin-S are still doing experimental development work and have therefore delayed submission of the product to the Council. If there is a small abscess at the place of the last injection, this should be opened and drained. Otherwise there is no specific remedy. The effects of Antuitrin-S and similar substances are nearly always temporary, because these substances are usually substitutional in character. Hence the untoward effects, just like the beneficial ones, should soon wear off. Of course, a search should be made for some other source of the urticaria, for it is possible that the sequential occurrence of this troublesome symptom and the injection of Antuitrin-S may have been accidental. It is not known whether theelin or other ovarian preparations will overcome the urticaria.

ETIOLOGY OF DIABETES

To the Editor:—I am anxious to collect some data on the etiologic factors in diabetes mellitus. A physician, aged 65, has suffered from diabetes mellitus for a period of fifteen years. He enlisted in the United States Army in 1917. Up to that time he had enjoyed perfect health. The previous history was negative except for diseases of infancy. Thirteen months after he enlisted, glycosuria appeared. Further investigation proved the cause to be diabetes mellitus. The family history is negative as to diabetes. The change from hospital practice to military duties involved considerable increase in work and effort. During the period of enlistment, the patient was under constant strain, both physical and mental. What is the general view as to the part played by overwork and mental stress in the causation of diabetes? Can you refer me to authorities on the etiology of diabetes mellitus? Please omit name and address.

M.D., California.

ANSWER.—The commonest years for the onset of diabetes in men are between 51 and 53. Decrease of work and effort are more apt to precede the onset of diabetes than the reverse. Physical and mental strain such as occurred in the German and American armies did not appear to favor diabetes, according to German and American authorities. The following references may be consulted:

Grafe: Metabolic Diseases and Their Treatment, Philadelphia, Lea and Febiger, 1933.
Joslin, E. P.: The Treatment of Diabetes Mellitus, Philadelphia, Lea and Febiger, 1928.
Lichtwitz: Lehrbuch der inneren Medizin, Krankheiten des Stoffwechsels und der Ernährung, Berlin, Julius Springer, 1931.
Rabinowitsch, Toronto, Macmillan Company of Canada, 1933.
Thannhauser: Stoffwechsel und Stoffwechsel Krankheiten, Munich, J. F. Bergmann, 1929.
Von Noorden and Isaac: Die Zuckerkrankheit, Berlin, Julius Springer, 1927.
Von Noorden: Neuzeitliche Diabetesfragen, Berlin, Urban & Schwarzenberg, 1933.

TOXICITY OF DINITROPHENOL

To the Editor:—I have been following the recent literature on the use of dinitrophenol in obesity with interest. Has any work been done to determine its mode of excretion or destruction in the body? Likewise, what are the possibilities of its storage in or deleterious effect on the liver, such as is known to occur with trinitrophenol? When such a drug as cinchophen is used, one is at least fully aware of the possibility of damage to the liver. Can as much be said for dinitrophenol, or are we still wholly in the dark? Please omit name.

M.D., New York.

ANSWER.—Dinitrophenol appears in the urine promptly and is rapidly excreted, probably within one or two days after administration. Its fate in the body is not certain, but possibly a part is converted to the less toxic aminonitrophenol. Continuous administration for as long as six months has not resulted in perceptible harm to the liver or other vital organs. The only alleged liver damage so far reported in patients is one case in which a physician undoubtedly mistook the yellow color of the dye dinitrophenol for bile pigments. In this case the supposed evidence of liver injury disappeared at once when the drug was discontinued. So far, it is not known whether continuous administration over periods of years might be harmful, but it is significant that workers engaged in making it during the war, when there was continuous exposure for several years at a time, did not show evidence of injury to the liver or other vital organs.

EATING OF CANDY BY CARDIAC PATIENT

To the Editor:—Please advise me as to whether there is any contraindication to giving candy in small quantities to a cardiac patient who is in a state of decompensation. Kindly omit name.

M.D., Michigan.

ANSWER.—There is not only no contraindication to giving candy in small quantities to cardiac patients but good reasons for giving it, so long as the candy is in a digestible form. All muscle needs an abundant supply of carbohydrate for its metabolism and this is especially true of the heart muscle, the needs of which are greater than those of the other muscles.

TREATMENT OF RECTAL GONORRHEA

To the Editor:—In THE JOURNAL, Dec. 23, 1933, page 2069, is a query regarding the treatment of rectal gonorrhea. In the answer given to the doctor from West Virginia, no mention is made of the use of diathermy in the treatment of the urethral and cervical infection. Because of this fact I am writing to bring this omission to your attention, as the method first described by Dr. Elkin P. Cumberbatch, who is director of electrotherapeutics at St. Bartholomew's Hospital in London, has proved to be a definite advance in the treatment of gonorrhea in women. Dr. Cumberbatch has been doing this work for over fifteen years and published a book on the subject, which probably has not been widely read in this country. I have been using his technic for about ten years with phenomenal success and we at the Medical Center in New York have used it as a routine procedure in all cases. I can most highly recommend this technic from actual experience in a large number of cases, which will be reported from our clinic next year and, on behalf of my interest in physical therapy, I think that some recognition of the effect of diathermy in these conditions should be given in the answers to queries that come in to THE JOURNAL. As a pretty good proof of the action of this form of treatment, I have had one case of rectal gonorrhea in which there was no infection of the urethra, cervix or vagina. I treated this patient for about a month, attempting to clear up the rectal infection with similar technic, and made definite progress. During all this period there was no transference of the infection anteriorly, which would strongly point to the fact that as she got the Cumberbatch method of diathermy to the urethra and cervix, this procedure was able to keep the cervical canal free of infection. On the advice of her family, the patient went to another doctor, who guaranteed a cure, and within two weeks she had a virulent cervical and urethral infection. This later spread into the tubes and the patient had to have one removed. The effectiveness in keeping the anterior parts clean during the time she was under my observation should be definite evidence as to the effectiveness of the heat created by the Cumberbatch technic.

NORMAN E. TITUS, M.D., New York.

SENSITIVITY TO EPHEDRINE

To the Editor:—I should like to add to the answer in THE JOURNAL, January 6, page 67, to the query on the possible ill effects from ephedrine. In addition to other evidences of sensitization, skin eruptions sometimes of a very extensive nature may develop (Abramowitz, E. W., and Noun, M. H.: Ephedrine Dermatoses: Clinical and Experimental Study of a Personal Case, with a Review of the Literature, *Brit. J. Dermat. & Syph.* 45:225 [June] 1933).

E. WILLIAM ABRAMOWITZ, M.D., New York.

PREPUTIAL INFLAMMATION

To the Editor:—Several inquiries have appeared regarding preputial inflammation. Many of these cases are due to fungi and are easily cured by frequent application of sodium thiosulphate, 10 per cent solution.

MALFORD W. THEWLIS, M.D., Wakefield, R. I.

Council on Medical Education and Hospitals

COMING EXAMINATIONS

AMERICAN BOARD OF DERMATOLOGY AND SYPHILOGY: Cleveland, June. Sec., Dr. C. Guy Lane, 416 Marlboro St., Boston.

AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY: *Written (Group B Candidates).* The examinations will be held in various cities of the United States and Canada, April 7. *Oral* (all candidates), Cleveland, June 12. Sec., Dr. Paul Titus, 1015 Highland Bldg., Pittsburgh.

AMERICAN BOARD OF OPHTHALMOLOGY: Cleveland, June 11. Sec., Dr. William H. Wilder, 122 S. Michigan Blvd., Chicago.

AMERICAN BOARD OF OTOLARYNGOLOGY: Cleveland, June 11. Sec., Dr. W. P. Wherry, 1500 Medical Arts Bldg., Omaha.

CALIFORNIA: Los Angeles, Feb. 26-March 1. Sec., Dr. Charles B. Pinkham, 420 State Office Bldg., Sacramento.

CONNECTICUT: *Regular.* Hartford, March 13-14. *Endorsement.* Hartford, March 27. Sec., Dr. Thomas P. Murdock, 147 W. Main St., Meriden. *Homeopathic.* New Haven, March 13. Sec., Dr. Edwin C. M. Hall, 82 Grand Ave., New Haven.

IDAHO: Boise, April 3. Commissioner of Law Enforcement, Hon. Emmitt Pfost, 205 State House, Boise.

ILLINOIS: Chicago, April 10-12. Supt. of Regis., Mr. Eugene R. Schwartz, Springfield.

IOWA: Des Moines, Feb. 26-28. Dir., Division of Licensure and Registration, Mr. H. W. Grefe, Capitol Bldg., Des Moines.

MAINE: Portland, March 13-14. Sec., Dr. Adam P. Leighton, Jr., 192 State St., Portland.

MASSACHUSETTS: Boston, March 13-15. Sec., Dr. Stephen Rushmore, 144 State House, Boston.

MINNESOTA: *Basic Science.* Minneapolis, April 3-4. Sec., Dr. J. Charnley McKinley, 126 Millard Hall, University of Minnesota, Minneapolis. *Medical.* Minneapolis, April 17-19. Sec., Dr. E. J. Engberg, 350 St. Peter St., St. Paul.

MONTANA: Helena, April 3. Sec., Dr. S. A. Cooney, 7 W. 6th Ave., Helena.

NATIONAL BOARD OF MEDICAL EXAMINERS: The examinations in Parts I and II will be held at centers in the United States where there are five or more candidates, May 7-9 (limited to a few centers), June 25-27, and Sept. 12-14. Ex. Sec., Mr. Everett S. Elwood, 225 S. 15th St., Philadelphia.

NEW HAMPSHIRE: March 15-16. Sec., Dr. Charles Duncan, State House, Concord.

NEW MEXICO: Santa Fe, April 9-10. Sec., Dr. P. G. Cornish, Jr., 221 W. Central Ave., Albuquerque.

OKLAHOMA: Oklahoma City, March 13-14. Sec., Dr. J. M. Byrum, Mammoth Bldg., Shawnee.

PUERTO RICO: San Juan, March 6. Sec., Dr. O. Costa Mandry, Box 536, San Juan.

RHODE ISLAND: Providence, April 5-6. Dir., Dr. Lester A. Round, 319 State Office Bldg., Providence.

TENNESSEE: Memphis, March 26-27. Sec., Dr. H. W. Qualls, 130 Madison Ave., Memphis.

WEST VIRGINIA: Charleston, March 12. State Health Commissioner, Dr. Arthur E. McClue, Charleston.

WISCONSIN: *Basic Science.* Madison, March 24. Sec., Prof. Robert N. Bauer, 3414 W. Wisconsin Ave., Milwaukee. *Reciprocity,* Milwaukee, April 5. Sec., Dr. Robert E. Flynn, 401 Main Street, LaCrosse.

New Jersey June Examination

Dr. James J. McGuire, secretary, New Jersey State Board of Medical Examiners, reports the written examination held in Trenton, June 20-21, 1933. The examination covered 9 subjects and included 90 questions. An average of 75 per cent was required to pass. One hundred and twenty candidates were examined, 116 of whom passed and 4 failed. The following schools were represented:

School	PASSED	Grad. Year	Cent Per
George Washington University School of Medicine	(1931) 80.8, 75.2, 75.6, 77.3, 76.4, 78.8, 77.6, 80, 81.3, 82.1, 82.2, 82.6, 83, 83.1, 87.6, 88, (1933) 75.1		
Loyola University School of Medicine	(1933) 75, 81, 81.4,		82.3
Rush Medical College	(1932) 82.2, (1933)		82.5
State University of Iowa College of Medicine	(1932)		82.1
University of Maryland School of Medicine and College of Physicians and Surgeons	(1932) 79.3,		85.6
Boston University School of Medicine	(1932) 77,		77
Tufts College Medical School	(1932) 77.2,		82.2
St. Louis University School of Medicine	(1932) 77.2, 77.8, 80.6, 82, 83.7		
Washington University School of Medicine	(1932)		83.2
Columbia Univ. College of Physicians and Surgeons	(1931) 78.4, 81, (1932) 77.3, 81.1, 81.5, 82.7, 83.6, 85.6		
Long Island College of Medicine	(1933?) 81, 81.4, 85.7,		85.8
New York Homeopathic Med. College and Flower Hosp.	(1932) 81.2, 83.4, 84.2		
New York University, University and Bellevue Hospital Medical College	(1932) 78.5,		83.8
University of Rochester School of Medicine	(1932)		78.5
Hahnemann Medical College and Hosp. of Philadelphia	(1932) 78.4, 80.6, 80.7, 81.8, 82, 82.1, 82.5, 82.6, 83.2, 83.2, 83.6, 83.7, 84.1, 84.5, 84.6, 87.1, 87.2, 89.2, 91.1		
Jefferson Medical College of Philadelphia	(1931) 79.4, 83.2, (1932) 79, 79.2, 80, 80.3, 80.8, 82.2, 83.8, 85.6, 85.8, 85.8, 86.6		
Temple University School of Medicine	(1931) 81.8, 85.7, (1932) 77.3, Ia 78.8, 82, 83.5, 84.5, 85.2		
University of Pennsylvania School of Medicine	(1930) 82.1, (1931) 84.7, (1932) 81.4, 83.7		
Woman's Medical College of Pennsylvania	(1932)		78.2
University of Tennessee College of Medicine	(1932)		82.6
Medical College of Virginia	(1932) 77.5,		79.1
University of Virginia Department of Medicine	(1932)		76.2
University of Toronto Faculty of Medicine	(1931)		82.5
Universidad de la Habana Facultad de Medicina y Farmacia	(1928)		78.6
Regia Università di Napoli. Facoltà di Medicina e Chirurgia	(1923) 75.8, (1924)		75
Regia Università di Pavia. Facoltà di Medicina e Chirurgia	(1921)		76.3
Regia Università di Roma. Facoltà di Medicina e Chirurgia	(1929) 79.8, (1931)		86.6*†
University of Edinburgh Faculty of Medicine	(1931) 82.5, (1932)		83.8

School	FAILED	Year Grad.	Per Cent
Georgetown University School of Medicine	(1932)	70.1,	70.8
Regia Università di Napoli. Facoltà di Medicina e Chirurgia	(1929)		69
Regia Università di Palermo. Facoltà di Medicina e Chirurgia	(1924)		68.8

* Verification of graduation in process.
† Average grade not reported. Verification of graduation in process.

Connecticut November Examination

Dr. Thomas P. Murdock, secretary, Connecticut Medical Examining Board, reports the written examination held in Hartford, Nov. 14-15, 1933. The examination covered 10 subjects and included 70 questions. An average of 75 per cent was required to pass. Thirty-two candidates were examined, 23 of whom passed and 9 failed. The following schools were represented:

School	PASSED	Year Grad.	Per Cent
George Washington University School of Medicine	(1931)		76
Georgetown University School of Medicine	(1933)		75.6
Johns Hopkins University School of Medicine	(1921)		80.1
Boston University School of Medicine	(1933)	75,*	80.9
Tufts College Medical School	(1931) 81.4, (1932) 77.8, (1933) 75,* 76.3, 77.8,* 80, 82.1*		
University of Michigan Medical School	(1925)		77
St. Louis University School of Medicine	(1933)		75.4
Long Island College of Medicine	(1932) 83.1, (1933)		80.9
N. Y. Univ., Univ. and Bellevue Hospital Med. College	(1933)		87.2
University of Rochester School of Medicine	(1932) 75, (1933)		82.2*
Jefferson Medical College of Philadelphia	(1932)		83
Meharry Medical College	(1932)		76.7*
University of Vermont College of Medicine	(1932)		79.6
McGill University Faculty of Medicine	(1932)		83.6

School	FAILED	Year Grad.	Per Cent
Georgetown Univ. School of Medicine	(1932)	64.5, (1933)	70.3, 71.5
University of Vermont College of Medicine	(1933)		71.2
Queen's University Faculty of Medicine	(1924)		71.9
Laval University Faculty of Medicine	(1933)		58.5
University of Montreal Faculty of Medicine	(1933)		70.2
Osteopaths (2) †			

Fifteen physicians were licensed by endorsement during December. The following schools were represented:

School	LICENSED BY ENDORSEMENT	Year Grad.	Endorsement of
Yale University School of Medicine	(1932)		N. B. M. Ex.
Georgetown University School of Medicine	(1913)		New York
Emory University School of Medicine	(1930)		Georgia
Northwestern University Medical School	(1928)		Illinois
Johns Hopkins University School of Medicine	(1929) (1930) Maryland		N. B. M. Ex.,
Harvard University Medical School	(1931) Massachusetts,		N. B. M. Ex.
Columbia Univ. College of Physicians and Surgeons	(1932)		N. B. M. Ex.
Cornell University Medical College	(1924)		New York
Fordham University School of Medicine	(1921)		New York
New York University, University and Bellevue Hospital Medical College	(1931)		N. B. M. Ex.
University of Vermont College of Medicine	(1931)		N. B. M. Ex.
Université de Paris Faculté de Médecine	(1927)		Vermont
Medizinische Fakultät der Friedrich-Wilhelms-Universitat, Berlin	(1898)		New York

* License has not been issued.
† Examined in medicine and surgery.

Florida November Examination

Dr. William M. Rowlett, secretary, State Board of Medical Examiners, State of Florida, reports the examination held in Jacksonville, Nov. 13-14, 1933. Forty-one candidates were examined, 40 of whom passed and 1 failed. The following schools were represented:

School	PASSED	Year Grad.	Per Cent
University of Arkansas School of Medicine	(1932)		85.4
College of Medical Evangelists	(1933)		82.6
Yale University School of Medicine	(1931)		90.4
Georgetown University School of Medicine	(1914)		80.1
Howard University College of Medicine	(1932)		80.8

Emory University School of Medicine	(1932) 76, (1933)	86.4
University of Georgia School of Medicine	(1932) 80.7, (1933)	80.1
Loyola University School of Medicine	(1933) 84.6,*	92*
Rush Medical College	(1931)	86.6
University of Illinois College of Medicine	(1933)	86*
University of Louisville Medical Department	(1898)	79.7
University of Louisville School of Medicine	(1931)	83.1
Tulane University of Louisiana School of Medicine	(1930) (1931) 88.2, (1932) 83.8, (1933) 90.3	82.6,
Johns Hopkins University School of Medicine	(1928)	88.1
University of Maryland School of Medicine and College of Physicians and Surgeons	(1922)	89.1
Harvard University Medical School	(1896)	78.7
University of Michigan Medical School	(1929)	86
University of Nebraska College of Medicine	(1921)	86.5
Western Reserve University Medical Department	(1910)	79.1
Jefferson Medical College of Philadelphia	(1896) (1904) 87.5, (1922) 81.7, (1929) 84.9	77.5,
Univ. of Pennsylvania School of Medicine	(1923) 91.1, (1932)	83.9
Medical College of the State of South Carolina	(1933)	82.8
Univ. of Tennessee College of Medicine	(1931) 77.5, (1933)	82.7
Vanderbilt University School of Medicine	(1913)	86.6
Medical College of Virginia	(1931)	87.6
Univ. of Virginia Department of Med.	(1930) 85.5, (1932)	89.7
Universidad de la Habana Facultad de Medicina y Farmacia	(1913) 75.2,† (1920)	75.8†

FAILED School	Year Grad.	Per Cent
Long Island College Hospital	(1908)	73.9

* This applicant has completed his medical course and will receive his M.D. degree on completion of internship.

† Verification of graduation in process.

Book Notices

The Principles of Treatment of Muscles and Joints by Graduated Muscular Contractions. By Morton Smart, C.V.O., D.S.O., M.D. Cloth. Price, $3.75. Pp. 217, with 4 illustrations. New York & London: Oxford University Press, 1933.

The object of this book is to present the treatment of injuries to muscles and joints and their sequelae by the method of graduated muscular contractions and to describe the electrical unit used and the technic of its application. The author emphasizes the importance of the restoration of muscle function after all types of injuries. He calls attention to the fact that when a joint is injured nearly every other component part receives some kind of treatment. While graduated muscular contraction treatment is not new, it was popularized by the author. A muscle, he points out, is a highly sensitive structure with power to respond to a variety of stimuli and when in a healthy state is capable, by its tone and its inherent power to contract, of acting as a guard to a joint by intercepting any sudden stresses that might cause damage to other joint structures. A knowledge of physiology is therefore essential to the study and treatment of injuries to muscles and joint structures. Although graduated muscular contractions are produced by means of an electric current, it must be understood that no virtue of curative power whatever is claimed from the use of electricity per se. In the foreword, William O'Neill Sherman says that graduated muscular contraction is the greatest advance in physical therapy since the introduction of massage as a therapeutic measure and can be used to the exclusion of the latter in the treatment of the various injuries. The method is indicated in the treatment of injuries of the soft parts, including muscle and ligament strains, sprains and hematoma, myositis, torticollis, atrophy of disuse, synovitis, periarticular adhesions, synovial adhesions and fibrous ankylosis. Sherman says that massage has been dispensed with in his clinic because of its limited value in comparison with graduated muscular contraction. He says also that the Smart unit permits of painless and graduated control of the muscle contraction from its origin to its insertion. The author has given his results with this method of treatment covering a period of thirty years of study of muscles and joints. The basic feature of the apparatus is that it permits the operator to have complete and accurate control of the strength of the stimulation throughout its whole range, so that he can cause the muscle to contract and relax with accuracy of time and degree. The book contains chapters on general physiology of muscle, trauma, posture, strain, sprain, manipulation of joints and after-treatment, adhesions following injury to the shoulder joint, technic in the manipulation of the shoulder joint, and description of the unit for producing graduated muscular contractions.

Diet and Personality: Fitting Food to Type and Environment. By L. Jean Bogert, Ph.D. With an Introduction by Lafayette B. Mendel, Ph.D., Sc.D., Sterling Professor of Physiological Chemistry in Yale University. Cloth. Price, $2. Pp. 223. New York: Macmillan Company, 1934.

This book is intended to stress the fact that diet must be adjusted to individual conditions. It is really an elementary book of general hygiene and includes discussions of rest, sunshine and mental habits, in addition to the discussions of diet. Its title is misleading, and the subtitle even more so, although some of the chapters deal with structural types—the stocky, the slender, the underweight and the middle-aged. The writer's descriptions of the personalities that go with these types are naive, and they are quite far from the beliefs of modern psychiatry. There are other chapters, which treat of such subjects as susceptibility to infections, indigestion and constipation, which, although they may affect the personality, are not of such moment, nor is their connection with it so well known, as to warrant their being included in a book supposedly on personality. The fact that the author stresses the effect of worry and strain on physical well being, and her references to the effect of improper hygiene on mental capacity, would give this book some value, and she deserves a word of praise for stressing the psychologic factors of metabolism and assimilation. Also it must be admitted that the book is easy reading. On the other hand, the psychologic material is unsatisfactory. For instance, the chapter entitled "Nervous Strain: The Great American Enemy" points out the real problems of overwork and fatigue, but the author suggests the elimination of worry by such broad and indefinite methods as a "change of mental habits." There is some discussion of the physiology of the body fluids, as well as the nervous system, scattered throughout the book, which are satisfactory and simple. Physicians will probably find this book no more useful than the usual book of hygiene intended for the layman; psychiatrists will probably reject it because the inferences it draws have yet to be justified; but some individual patients may be helped by reading certain chapters.

Once lecciones sobre el reumatismo. Por G. Marañón, profesor de la Universidad Central. Instituto de patología médica del Hospital General de Madrid. Paper. Price, 10 pesetas. Pp. 249, with 51 illustrations. Madrid: Espasa-Calpe, S. A., 1933.

The popular term "rheumatism" includes articular and muscular conditions. These two types are divided into subgroups on the basis of etiology: the articular into the endogenous, the exogenous, the symptomatic and those of doubtful origin. The muscular variety is the result of endogenous or exogenous agencies. There are eight lectures devoted to the articular form. The discourse on the cardio-articular, focal and symptomatic rheumatisms is the best. Of interest is the portion concerning the traumatic variety. Trauma may produce the ordinary signs and symptoms of acute articular rheumatism, but this is not a true rheumatic condition. In the chronic deforming arthritides, a history of injury is often obtained. These subtypes are of great import in cases in which the question of compensation becomes paramount. There is one lecture on the muscular rheumatisms. The last lecture has to do with treatment. It is essential that the underlying cause of the disease be determined in each case so that it may be treated. In this way the best results may be obtained. Each lecture is supplemented with an extensive bibliography. There is also a helpful glossary of rheumatic terms.

The Digestive Tract: A Radiological Study of its Anatomy, Physiology, and Pathology. By Alfred E. Barclay, O.B.E., M.A., M.D., Lecturer in Medical Radiology, University of Cambridge. Cloth. Price, $12. Pp. 395, with 275 illustrations. New York: The Macmillan Company; Cambridge: The University Press, 1933.

This is a radiologic study of the anatomy, physiology and pathology of the digestive tract. There are also several chapters on technic. The text is written clearly. The illustrations are numerous; especially is this true of the normal position of the viscera seen on fluoroscopic and plate examination. One, therefore, will be able to detect deviations from the normal. The book is to be recommended as a useful one for the office or the laboratory.

Medicolegal

Hair Dyes: Right of Court to Require Disclosure of Ingredients.—The plaintiff brought suit against Inecto, Inc., and another, alleging that a hair dye manufactured by the corporation was inherently dangerous and that it injured her when it was applied to her scalp, eyelashes and eyebrows. The taking of testimony before trial, under certain restrictions, is sanctioned by a New York statute, if such testimony is material and necessary to the plaintiff's cause of action. Acting thereunder, the plaintiff served notice on the corporation that, before trial, its testimony would be taken at a specified time and place, and the supreme court of New York ordered the corporation to submit to this pretrial examination and to give testimony concerning the chemicals, poisons, drugs and other ingredients of the hair dye. This order was affirmed by the appellate division, and the corporation appealed to the Court of Appeals of New York.

The plaintiff, said the Court of Appeals, to succeed in her action must prove the presence of inherently dangerous and poisonous ingredients in the hair dye. *Karr* v. *Inecto, Inc.*, 247 N. Y. 360, 160 N. E. 398. If proof of the presence of such ingredients can be obtained only by an examination of the defendant corporation, it cannot be held as a matter of law that an examination before trial is not necessary. If other methods of ascertaining the presence of the poisonous ingredients are available, the examination before trial of the corporation is not necessary. The corporation contended that if its dye contained poisonous ingredients such a fact may be established by analysis. If this be true, and the record disclosed nothing to the contrary, the court said, the plaintiff does not have a right, based on necessity, to examine the corporation with respect to the presence of these ingredients. The formula employed in the manufacture of the dye is property and if the secret compound contains nothing except harmless ingredients and its alleged injurious effect on the plaintiff was due to her idiosyncrasy, then the corporation's property right is entitled to preservation. Generally, disclosure of legitimate trade secrets will not be required except to the extent that it appears to be indispensable for ascertaining the truth. There can be no legal sanction for the circulation of poison throughout the community, continued the court, and if the dye does include inherently dangerous substances, the secrecy of its manufacture ought not to be protected. An examination of the corporation before trial, however, may and probably will, the court said, have a tendency to disclose not only the ingredients of the dye, which may be entirely harmless to the normal person, but it may also uncover other facts which might lead to destruction of valuable property rights vested in the corporation by their transfer, through such a publication, to trade rivals. Since the record disclosed a total lack of evidence bearing on any necessity for an examination of the corporation before trial, both the supreme court and the appellate division were without discretionary power to order it, concluded the Court of Appeals. Accordingly, the order permitting the examination was reversed. —*Drake v. Herrman (N. Y.), 185 N. E. 685.*

Workmen's Compensation Acts: Award No Bar to Action for Malpractice.—The Tennessee workmen's compensation act provides that, whenever an employee has sustained an industrial injury under circumstances creating liability in some other person than the employer, the employee may, at his option, claim compensation from his employer, or proceed at law against such other person, or proceed against both the employer and such other person. He may not, however, collect from both. If compensation is awarded under the workmen's compensation act and the employer pays the compensation or becomes liable therefor, he may collect in his own name or in the name of the injured employee from the other person, against whom legal liability for damages exists, the amount paid the employee. This provision, said the Supreme Court of Tennessee, does not prevent an employee from suing a physician whose malpractice has aggravated his industrial injury, even though the employee has previously recovered compensation from his employer by reason of a settlement, if in such settlement the employer expressly waives his right of subrogation, and if no part of the compensation paid was for loss of time and for injuries suffered by the employee because of the physician's negligence.

The workmen's compensation act, continued the court, was enacted for the benefit of employers and employees. It has little concern with the rights of third parties, negligent wrongdoers. The provision discussed is clearly for the benefit of the employer, to prevent the employee from recovering damages from a third party and at the same time recovering compensation under the act from his employer. It gives an employer, paying compensation under the act, a right of action against the wrongdoer inflicting the damages. An employer may waive his right of subrogation and no rights of the wrongdoer are affected. The right of action against the wrongdoer accrues to the employee. The employer paying compensation may take this right of action from the employee or he may leave it with the employee. If, in a settlement between the employer and the employee, it is agreed that the right of action against the third party wrongdoer shall be left with the employee, the third party wrongdoer cannot complain. In any event, the wrongdoer can be held only for such damages as he has inflicted, whether he be sued by the employer or by the employee. If the suit is by or for the employer, the statute limits recovery to the amount paid by the employer to the employee. An employee may recover full damages for the tortious injury inflicted on him by the third party.

The physician defendant in this case, concluded the Supreme Court, may not question the motives that influence and the considerations that support a settlement between the employee and his employer. The physician's liability to the employee is just what it was before compensation proceedings were begun. The decision of the trial court against the employee was therefore reversed and the case remanded for further proceedings.—*Keen v. Allison (Tenn.), 60 S. W. (2d) 158.*

Malpractice: Sponge Left in Operation Wound.—The plaintiff sued the defendant-physicians, alleging that they negligently left a large piece of towel or surgical gauze in his abdomen following a herniotomy and that an infection followed, which incapacitated him for two years. The trial court directed a verdict for the defendants, and the plaintiff appealed to the Supreme Court of Wyoming.

At the trial a nurse, who was in charge of the hospital in which the herniotomy was performed and who attended the plaintiff, testified that she removed the dressings on the operation wound, October 15, ten days after the operation, and that there was stitch pus and the dressing was soiled from drainage. The wound was closed and she saw no rubber tubing or gauze in it. On October 22, she further testified, she removed from the wound a towel about 12 by 24 inches, similar to the towel furnished by the hospital for use in operations. The hospital record of the daily condition of the patient, prepared by the nurse, showed an entry for that date: "Retained sponge removed." On cross-examination, she stated that all dressings used in the operation were sterile. The plaintiff called both defendants for cross-examination, a procedure authorized by statute. The defendant Hylton testified that he performed the operation and that in a large percentage of cases it is bad practice for a physician to leave a foreign substance in a wound. He testified that he left no towel in the incision but that he did leave gauze drainage because of fear of pus. This constituted good practice, he said. Both he and the defendant Earle, who assisted in the operation and who was called for cross-examination under the statute, testified that the leaving of a sterilized towel in a wound would not cause infection. There was no other medical testimony.

Before a plaintiff can recover for malpractice, said the Supreme Court, he must show by affirmative evidence that the defendant was unskilful or negligent and that his want of skill or care caused injury to the plaintiff. If either element is lacking in the proof, the plaintiff has presented no case for the consideration of a jury. Where evidence is as consistent with the absence as with the existence of negligence, the case should not be left to the jury. What is or is not common practice on the part of a physician is a question for experts and can be established only by their testimony. In the case

at bar, continued the court, claim was made that the infection resulted from the alleged failure of the defendants to remove a towel or surgical gauze from the operation wound. The burden of proof rested on the plaintiff to show that a towel or surgical gauze was negligently left in the operation wound. The testimony of the nurse was relied on to establish this fact. She was not present at the operation and did not of course know what was then done. She did testify that a *towel* was removed from the wound, October 22. Nevertheless, on the hospital record which she testified she made herself, she noted: "Retained *sponge* removed." Nothing was entered about a towel. The defendant Hylton, who performed the operation, denied that any towel was left in the incision but testified that necessary gauze drainage was left. Thus this defendant's testimony, observed the court, coincided with the hospital record. If the defendant Hylton's testimony be true, then there was no proof of negligence in leaving the foreign matter in the wound. The nurse's oral testimony was in conflict with the statement in the hospital record, which she made. The jury would have been obliged to guess whether a towel or a sponge was removed from the wound. The court considered it at least doubtful whether the burden of proof was sustained by the plaintiff to show negligence on the part of the defendants.

There still remained the question, continued the court, whether the plaintiff established any causal connection between the alleged negligence and the damage suffered. Both defendants testified that a sterile towel left in a wound would not cause infection, and there was no evidence to the contrary. Furthermore, the nurse testified that all dressings used in the operation were sterile. In the absence of evidence on the subject, it will be presumed that a physician or surgeon discharged his full duty to the patient, including the exercise of reasonable care and skill in his treatment. It devolved on the plaintiff, in order to justify the submission of the case to the jury, to produce evidence that the towel was not sterile and this was not done. Accordingly, the Supreme Court affirmed the action of the trial court in directing a verdict for the defendant-physicians.—*Rosson v. Hylton (Wyo.), 22 P. (2d) 195.*

Workmen's Compensation Acts: Compensability of Traumatic Neurosis.—On June 17, 1929, a slab of rock fell a distance of about six feet on to Sykes' shoulders and back, knocking him down. He was able to walk to a car and was taken home. Within a week he returned to work and worked until August 22, when he was compelled to quit because of severe pains in his back and neck. He remained in bed for five or six weeks under the care of a chiropractor. His left leg became partially paralyzed. His employer paid him compensation for one year. In August 1930, Sykes refused the employer's offer of light work and thereupon the employer ceased making payments. Sykes then instituted proceedings before the industrial accident board.

All the physicians who testified before the board agreed that Sykes showed symptoms of an injury to his spinal column and partial paralysis of the left leg. They could, however, find no evidence of any bony lesion. They declared the disability to be functional rather than organic. The medical witnesses acquitted Sykes of malingering and testified that he was partially disabled but that he would eventually recover. The industrial board concluded that while Sykes was suffering from a partial disability at the time of the hearing, the disability would end on or about May 1, 1931, and ordered the payment of compensation until that time. Sykes then appealed to the district court, Musselshell county, Montana, where the case came to trial, apparently, after May 1, 1931, the date set by the industrial commission for the termination of Sykes' disability. In the district court, lay witnesses testified that Sykes was then unable to perform any labor, that he became exhausted driving a car, and that he was in no better condition than at the time of the hearing before the board. The physicians who testified at the board hearing had reexamined Sykes and testified in the district court that Sykes' condition was due to traumatic neurosis and that it was uncertain how much of the condition was due to physical causes and how much attributable to psychic and mental causes. The district court concluded that the industrial board erred in finding that Sykes' disability would end May 1 and thereupon awarded compensation for partial disability permanent in character. The employer appealed to the Supreme Court of Montana.

The neurotic condition incapacitating Sykes, if solely the result of an industrial accident, entitles him to compensation, said the Supreme Court. The fact that he, but for the want of sufficient will power, could throw off his condition, brought about by hysteria and neurosis caused by the injury, cannot deprive him of compensation based on his inability to work. If the disability could be overcome by a simple operation, or by definite treatment, and continues only because the injured workman refuses to submit thereto, no compensation would be allowable. The foregoing rule is not applicable to the present case, however, said the court. The evidence shows that the recovery of Sykes is highly problematic, being dependent on a change of mental condition to be brought about through the operation of some stimulus impossible of accurate application and dependent solely on chance and the efforts of the workman. Furthermore, the court said, the evidence gives no assurance that Sykes, though he exercises his mental processes to the utmost, could by the exertion of will power "snap out of it." Under a liberal conception of the workmen's compensation act, concluded the court, if it is shown that an injured workman will suffer disability for an indefinite period, his disability is permanent in character. The district court, therefore, did not err in awarding Sykes compensation for a partial disability permanent in character.—*Sykes v. Republic Coal Co. (Mont.), 22 P. (2d) 157.*

Malpractice: Jury May Not Disregard Expert Testimony.—The plaintiff sued the defendant-physician for alleged malpractice in treating a complicated Pott's fracture. At the trial the plaintiff called a physician who, on cross-examination, testified that under the circumstances the result obtained by the defendant was excellent and that there was nothing to criticize in the defendant's treatment of the case. There was no other medical testimony introduced. Nevertheless the jury returned a verdict for the patient and the physician appealed to the Supreme Judicial Court of Maine. It is difficult to understand why, said the Supreme Judicial Court, in view of the only expert testimony adduced at the trial, the case should have been submitted to the jury. True, the expert witness had been summoned by the plaintiff and the important features of his evidence were in answer to questions propounded by the attorney for the defense, but neither his professional knowledge nor his integrity was attacked. The expert witness was apparently frank, unprejudiced, unbiased and fair in all of his statements. His testimony stood uncontradicted. The verdict assumed it to be of no value whatever. The jury was not justified in disregarding it. The judgment in favor of the patient was accordingly reversed.—*Burns v. Haskell (Maine), 166 A. 384.*

Society Proceedings

COMING MEETINGS

American Association of Anatomists, Philadelphia, March 29-31. Dr. George W. Corner, University of Rochester School of Medicine, Rochester, N. Y., Secretary.

American Association of Pathologists and Bacteriologists, Toronto, Canada, March 29-30. Dr. Howard T. Karsner, 2085 Adelbert Road, Cleveland, Secretary.

American Laryngological, Rhinological and Otological Society, Charleston, S. C., April 3-5. Dr. Robert L. Loughran, Bridgewater, Conn., Secretary.

American Orthopsychiatric Association, Chicago, Feb. 22-24. Dr. George S. Stevenson, 450 Seventh Avenue, New York, Secretary.

American Physiological Society, New York, March 28-31. Dr. Frank C. Mann, Mayo Clinic, Rochester, Minn., Secretary.

American Society for Experimental Pathology, New York, March 28-31. Dr. C. Phillip Miller, Jr., 950 East 59th Street, Chicago, Secretary.

American Society of Biological Chemistry, New York, March 28-31. Dr. H. A. Mattill, Chemistry Building, State University of Iowa, Iowa City, Secretary.

Federation of American Societies for Experimental Biology, New York, March 28-31. Dr. Frank C. Mann, Mayo Clinic, Rochester, Minn., Secretary.

Louisiana State Medical Society, Shreveport, April 9-12. Dr. P. T. Talbot, 1430 Tulane Avenue, New Orleans, Secretary.

Pacific Coast Surgical Association, Portland, Oregon, Feb. 21-24. Dr. Edgar L. Gilcreest, 384 Post St., San Francisco, Secretary.

Southeastern Surgical Congress, Nashville, Tenn., March 5-7. Dr. B. T. Beasley, 1019 Doctors' Building, Atlanta, Ga., Secretary.

Current Medical Literature

AMERICAN

The Association library lends periodicals to Fellows of the Association and to individual subscribers to THE JOURNAL in continental United States and Canada for a period of three days. Periodicals are available from 1925 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 12 cents if two periodicals are requested). Periodicals published by the American Medical Association are not available for lending but may be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below.

American Journal of Ophthalmology, St. Louis

16: 945-1040 (Nov.) 1933

Some Remarks on Etiology of Cataracts: Slit Lamp Studies. A. J. Bedell, Albany, N. Y.—p. 945.
Possible Influence of Immunologic Factors in Production of Cataract. A. C. Woods and E. L. Burky, Baltimore.—p. 951.
Experimental Study of Corneal Vascularization. L. A. Julianelle, M. C. Morris and R. W. Harrison, St. Louis.—p. 962.
Changes in Astigmatism. E. Jackson, Denver.—p. 967.
*Use of Calcium Gluconate in Diseases of Eye. Georgiana D. Theobald, Oak Park, Ill.—p. 975.
Very High Astigmatism in Keratoconus and Postcataract Cases. B. Y. Alvis and M. Wiener, St. Louis.—p. 981.
Contribution to Problem of Enzyme Action in Mechanism of Cataract. A. Sauermann, New York.—p. 985.

Use of Calcium Gluconate in Eye Diseases.—Theobald gives the results in twenty-four cases of inflammatory ocular disease in which calcium gluconate was used. She observed that pain ceased usually two hours after the first injection; after the second injection in severe cases there was a definite rapidity of absorption of exudates, breaking down of adhesions and dilatation of the pupil, the improvement in the general health was definite and the patients gained in weight and acquired a feeling of well being. It was necessary to remove as thoroughly as possible all foci of infection. When this was not done, after the first general improvement progress was retarded or there would be recurrent attacks, which required more frequent doses of calcium and finally the removal of these foci. The course of the recurrent corneal ulcers was shortened with calcium therapy.

American Journal of Public Health, New York

23: 1017-1114 (Oct.) 1933

Radium Poisoning: Review of Present Knowledge. R. D. Evans, Berkeley, Calif.—p. 1017.
Mechanism of Infection in Poliomyelitis. H. K. Faber, San Francisco.—p. 1024.
Natural and Induced Variations in Vitamin Values of Milk. H. C. Sherman, New York.—p. 1031.
Toxic Amblyopia and Accompanying Physiologic Disturbances in Carbon Tetrachloride Intoxication. Z. T. Wirtschafter, Cleveland.—p. 1035.
"Food-Poisoning": Public Health Problem. J. C. Geiger and J. P. Gray, San Francisco.—p. 1039.
Ten Years of Public Health Administration in Ohio. R. G. Paterson, Columbus, Ohio.—p. 1045.
Industrial Dermatitis in the United States. L. Schwartz, New York.—p. 1049.
Antigenic Value of Commercial Diphtheria Toxoids. W. Levin and Helen A. Cary, Portland, Ore.—p. 1067.

American Journal of Surgery, New York

22: 397-602 (Dec.) 1933

Thirty-Nine Extramedullary Tumors of the Spinal Cord. K. Tamaki, San Francisco.—p. 397.
Craniocerebral Injuries. J. M. Foster, Jr., and D. Prey, Denver.—p. 420.
Neurogenic Imbalance of Pelvic Organs: Treatment with Sympathetic Ganglionectomy. W. D. Abbott and R. O. Pfaff, Des Moines, Iowa.—p. 426.
Neurogenic Appendicitis: Study of One Hundred and Ninety-Five Cases of Appendicular Neuromas. K. Hosoi, New Orleans.—p. 428.
*Technic of Phrenicectomy: Use of Short Incision. W. E. Delaney, Jr., Williamsport, Pa.—p. 447.
*Combined Phrenic Exeresis and Scaleniotomy. T. B. Aycock, Baltimore.—p. 451.
*Femoral Hernia: Review of Operative Technic and New Method of Repair. G. P. Coopernail, Bedford, N. Y.—p. 458.
Treatment of Laparotomy Incisions. K. Roberts and W. W. Johnson, New York.—p. 461.
Intussusception. H. Koster, Brooklyn.—p. 465.
Control of Inaccessible Hemorrhage. H. Lilienthal, New York.—p. 476.
Peritonitis: Pathologic Physiology Involved in Treatment. E. H. Mensing, Milwaukee.—p. 478.
Early Treatment of Equinus in Congenital Clubfoot. J. C. McCauley, Jr., and A. Krida, New York.—p. 491.
Osteitis Deformans Affecting the Bones of the Face. G. B. New and F. R. Harper, Rochester, Minn.—p. 500.
*Method of Treatment of Upward Dislocation of Acromial End of Clavicle. G. H. Copher, St. Louis.—p. 507.
Avertin Anesthesia in Bone and Joint Surgery from the Surgeon's Point of View. G. E. Haggart, Boston.—p. 509.
Chemical Attack on Cancer. C. Voegtlin, Washington, D. C.—p. 512.
Early Diagnosis of Carcinoma of Large Intestine. J. T. Priestley and J. A. Bargen, Rochester, Minn.—p. 515.
*Validity of Present Criteria for Diagnosis of Carotid Body Tumor, with Especial Reference to Branchiogenetic Cysts. E. I. Greene and J. M. Greene, Chicago.—p. 521.
Vascular Obstruction of Ureter in Juveniles. M. F. Campbell, New York.—p. 527.
Rôle of Ureter in Renal Tuberculosis. R. V. Day, Los Angeles.—p. 542.
Advanced Bladder and Urethral Tuberculosis: Treatment by Ureteral Transplantation Following Preliminary Colostomy. R. M. Nesbit, Ann Arbor, Mich.—p. 547.
Carbuncle of the Kidney: Metastatic Staphylococcus Abscess of the Kidney. W. N. Taylor, Columbus, Ohio.—p. 550.
Urachal Cysts and Fistulas. Marion Douglass, Cleveland.—p. 557.
Panhysterectomy: Clinical Analysis of One Hundred and Fifty Cases from the Vaginal and Abdominal Approach. J. T. Witherspoon and Virginia W. Butler, New Orleans.—p. 561.
Hematemesis from Phytobezoar. L. A. Smith, Indianapolis.—p. 565.
Auto Blood Transfusion Apparatus. N. W. Cornell, New York.—p. 568.

Phrenicectomy: Use of Short Incision.—Delaney states that it is possible to avulse the phrenic nerve through an incision one-half inch long. Never should it be necessary to extend the incision to more than seven-eighths inch. He presents a technic in which phrenicectomy is performed through an incision of minimal length. After the administration of a capsule of sodium amytal two hours preceding the operation, and of a hypodermic of one-sixth grain (0.01 Gm.) of morphine sulphate and 1/150 grain (0.0004 Gm.) of atropine sulphate before being sent to the operating room, the patient is placed on the table reclining at an angle of about 30 degrees. The face is turned away from the operator, who stands on the affected side. After the skin is prepared, the patient is asked to begin to raise the head with the face remaining turned away. The border of the clavicular insertion of the sternocleidomastoid muscle can be easily palpated and the incision is to be made along the lateral border of this portion of the muscle. A 1 per cent solution of procaine hydrochloride is infiltrated in the skin, beginning at a point one fingerbreadth above the clavicle. The infiltration may continue for about an inch upward, following the border of the clavicular insertion of the sternocleidomastoid muscle. An incision one-half inch (1.25 cm.) long is then made. The tissues are separated by blunt dissection with two plain thumb forceps. The platysma muscle is separated in the direction of its fibers. The cervical fascia is opened. Dissection is toward the anterior scalenus muscle. After the fascia has been penetrated, retractors are used. The dissection continues down on a pad of fat. It is essential to dissect through this pad of supraclavicular fat in order to come directly down on the anterior scalenus muscle in the normal location of the phrenic nerve. The phrenic nerve is grasped gently with the thumb forceps. The nerve is freed from the surrounding areolar tissue and infiltrated high up with a 1 per cent solution of procaine. The nerve is then clamped with an avulser the shank of which has been passed through the finger loop of an ordinary hemostat. The latter serves as a fulcrum as the avulser is being rotated. The nerve is cut with scissors as high above the avulser as possible and then slowly twisted on the shank of the avulser as the handle is rotated. The baffle at the distal end prevents the nerve from slipping off the instrument. Attachments of fascia to the nerve should be freed from the nerve with a tissue forceps as the avulsion progresses. After a few inches has been removed there is a characteristic snap and the nerve can be lifted out of the incision. There should be no hemorrhage after the removal of the nerve. The tissues are sponged and if dry they are closed. A few interrupted sutures of number 0 plain catgut close the fascia and the platysma muscle. The skin may be closed with one skin clip, which is removed on the third day.

Combined Phrenic Exeresis and Scaleniotomy.—Aycock describes an operative method, a combined phrenic exeresis and scaleniotomy, in which the level of the incision is determined by placing the fore and middle fingers just above the upper border of the clavicle. At this junction the scalenus anterior

muscle is palpated and at this level from 4 to 5 cc. of 0.5 per cent solution of procaine hydrochloride is injected in the cutaneous and subcutaneous tissue. The line of incision extends from a point about one-fourth inch in front of the dorsal border of the sternomastoid muscle to a point just in front of the ventral border of the trapezius muscle, approximately 1½ inches in length. The knife is used only through the skin, superficial fascia and platysma muscle and then dissecting scissors are used to uncover the ventral surface of the anterior scalenus muscle. Small blunt hook retractors are inserted and retracted in the line of incision. Once the muscle has been uncovered the phrenic nerve is located, injected with procaine, lifted out of its bed, dissected free, cut and slowly avulsed. Subsequent to the avulsion, the scalenus anterior muscle is dissected free and a small periosteal elevator passed behind it, leaving the fifth, sixth and seventh cervical nerve trunks uninjured. All the fibers of this muscle are severed in this way except a few that come off from the transverse process of the sixth cervical vertebra. These fibers are picked up with rat tooth forceps and teased apart with scissors. The fifth cervical nerve trunk is gently retracted downward and toward the midline. The scalenus medius and posterior are picked up and either cut or teased apart with blunt pointed scissors. The fibers originating from the transverse process of the seventh cervical vertebra must be severed. There is usually no bleeding except slight oozing from the severed muscle fibers. The author points out that the results in his seventy cases indicate that this combined operation has had a distinct advantage over phrenic exeresis alone.

New Method of Repair for Femoral Hernia.—Coopernail uses the same technic for simple and strangulated hernias, except in the manner of dealing with the intestine and in the selection of the anesthetic. His procedure is as follows: An incision is made through the skin from 10 to 12 cm. long, parallel with and about 3 cm. above Poupart's ligament. After the fascia is exposed, the lower flap of the skin is dissected downward until the hernial sac is completely isolated. The sac is opened; if it contains adherent omentum, this is separated and reduced. If the sac contains intestine and the constriction is tight enough to prevent easy reduction, no attempt is made to reduce it until the constricting band is cut later on. The upper flap is retracted and an incision is made through the aponeurosis of the external oblique parallel to Poupart's ligament from 2 to 3 cm. above the inguinal canal. An opening is made through the internal oblique and transversalis muscles in a line parallel with that of their fibers. After the peritoneum is exposed and an incision from 4 to 6 cm. long is made in it, a finger is hooked under the strangulated intestine. If gentle traction combined with slight pressure from below does not release the intestine, the constriction is cut from below. After the constriction is released and the strangulation relieved, the injured intestine is lifted out of the abdominal cavity along with as much of the healthy intestine as is necessary if resection is to be performed. If a resection is necessary, there is no danger of injury to the anastomosis as there is in reducing it in the low operation. The hernial sac is freed completely in the canal so that it can be inverted into the abdominal cavity. The sac is picked up with the forceps and pulled up through the abdominal incision, and the peritoneum is sutured all around it, closing the abdominal cavity. The sac is then amputated flush with the fascia. It may be necessary to ligate one or two small vessels in the sac. The separated muscles are sutured together, the sutures passing through both walls of the sac; over this the fascia is then sutured with interrupted chromic catgut sutures with an occasional deep suture passing through the stump of the sac. The skin is closed in the usual manner without drainage unless there is an excess of adipose tissue or any danger of infection.

Treatment of Upward Dislocation of the Acromial End of the Clavicle.—Copher points out that the rational position for fixation of the shoulder after reduction of an upward dislocation of the outer end of the clavicle is backward and upward. This position is accomplished by the use of an elastic bandage placed about the shoulders in a figure of eight. Before the elastic bandage is applied, a pad of cotton and saddle felt, 1 or 2 inches thick and about 2 inches in diameter, is placed over the outer end of the dislocated clavicle and held in place by adhesive plaster. The axillary folds and spaces are padded with cotton for comfort and to absorb perspiration. The elastic bandage is applied about the shoulders in the manner of a figure of eight, making pressure on the pad overlying the outer end of the dislocated clavicle. It is desirable to use a bandage containing rubber. The elastic bandage pulls the scapulas and at the same time effectively depresses the pad and the dislocated end of the clavicle. The bandage is prevented from slipping by the insertion of safety pins at points where the bandage crosses. The tension of the elastic bandage is made more effective by placing the forearm on the injured side in a fairly tight sling. The sling displaces the weight of the extremity from the shoulder to about the neck and helps to elevate the shoulder above its normal level. An axillary pad is used to prevent inward displacement of the shoulder.

Diagnosis of Carotid Body Tumor.—The present criteria of the Greenes in arriving at a diagnosis of tumor of the carotid body are: (1) the position of the tumor, (2) its movement laterally, but absent vertical mobility, and (3) its transmitted but nonexpansile pulsation. Because of the proximity and frequent attachment to the underlying great vessels of the neck, branchiogenic cysts may fulfil all these criteria. Heretofore, the diagnosis of a tumor of the carotid body as well as branchiogenic cysts has been made with difficulty, and most frequently the true condition was not established until the neck had been opened, when the exact nature of the lesion became apparent. The ability to make a correct preoperative diagnosis is of utmost importance because of the inequality in the surgical difficulties encountered in the two lesions: the branchiogenic cysts are usually relatively simple, while a tumor of the carotid body requires skilled surgical ability. The mortality and morbidity in the two conditions vary; the former is practically nil, while the latter is extremely high. The history and physical observations in the two conditions may be insufficient to determine the exact status of the lesion. The introduction of an 18-gage needle will help greatly in arriving at the proper diagnosis. By this means the contents may be aspirated, if the tumor is cystic, and, by demonstrating the presence of cholesterol crystals, a diagnosis of branchial cyst is established. Should the diagnosis still be in doubt, an opaque medium may be introduced through the needle and a roentgenogram taken which will be of further aid. If the tumor is discovered to be solid, a syringe may be attached to the needle and some of the material aspirated and immediately examined, thus establishing its specific identity. Should the lesion be an aneurysm or should the needle enter any of the large vessels, no damage can result.

Archives of Ophthalmology, Chicago

10: 585-732 (Nov.) 1933

Indications for Treatment for Combined Lateral and Vertical Strabismus. J. W. White, New York.—p. 585.
Mixed (Teratoid) Tumors of the Lacrimal Caruncle. D. T. Vail, Jr., Cincinnati.—p. 593.
Retraction Syndrome. R. Aebli, New York.—p. 602.
Metastatic Carcinoma in Both Optic Nerves Simulating Retrobulbar Neuritis. T. L. Terry and E. B. Dunphy, Boston.—p. 611.
Visualization of Foreign Bodies in the Iridocorneal Angle: Simple Method of Stereoscopic Gonioscopy. G. M. Bruce, New York.—p. 615.
National Society for Prevention of Blindness: Lay Movement for Conservation of Vision. W. C. Posey, Radnor, Pa., and L. H. Carris, New York.—p. 621.
Chemistry of the Lens: III. Autolysis of the Lenticular Proteins. A. C. Krause, Baltimore.—p. 631.
Effect of Stereopsis Produced by Disparate Retinal Images of Different Luminosities. F. H. Verhoeff, Boston.—p. 640.
*Function of Reattached Retina. P. C. Kronfeld, Chicago.—p. 646.
Actinomycosis of the Orbit. M. N. Beigelman, Los Angeles.—p. 664.
*Use of Nupercaine in Ophthalmology. E. E. Dillon and C. Greer, Chicago.—p. 674.

Function of Reattached Retina.—Kronfeld states that, in partial or complete macular detachments of a duration of less than two months and also in partial macular detachment of more than two months, the prognosis concerning restoration of function is favorable. He studied the function of the reattached retina in six cases of partial sector-shaped retinal detachment of more than one month which yielded to Gonin-Lindner or Weve diathermic operations. The 2 degree white isopter was normal outside its limitation at the area of opera-

tion. The 0.17 degree white isopter was found constricted in each case, the degree of radial constriction apparently strictly depending on the duration of the detachment and perhaps on the age of the patient. The dark field paralleled the isopter for 0.17 degree closely, outside of the fact that in one case of long standing the dark field (taken with the usual target) remained at zero over the entire reattached area. The longitudinal extent of the constriction for white, colored and light targets in the dark room paralleled the extent of the detachment. No definite signs of remote, permanent, noxious effect from uncomplicated operations after Gonin-Lindner, Lindner-Guist and Weve-Safar were found.

Use of Nupercaine in Ophthalmology.—Dillon and Greer used nupercaine in ten cases of pterygium by instillation and injection. None of the patients complained of severe after-pain, and in a number there was no postoperative discomfort whatever. With nupercaine a somewhat longer time is necessary for the induction of anesthesia, from fifteen to twenty minutes in cases of pterygium. In some cases sufficient anesthesia could be obtained by instillation alone, while in others the injection of from 2 to 3 drops of a 1 : 1,000 dilution was necessary. The freedom from after-pain was quite definite as compared with that in patients operated on under cocaine anesthesia. A 1 : 500 ointment of nupercaine was used and freedom from after-pain was noted in cases of corneal abrasions, pterygium and other conditions. Particularly because of its prolonged anesthetic effect, nupercaine is a valuable drug in certain ophthalmologic procedures.

Arkansas Medical Society Journal, Little Rock

30: 89-120 (Oct.) 1933

Cysts of Ciliary Processes and Cysts of Superficial Layer of the Iris: Report of Two Cases. E. H. Cary, Dallas, Texas.—p. 92.
Management of Cavities in Treatment of Pulmonary Tuberculosis. L. J. Moorman, Oklahoma City.—p. 97.

Canadian Public Health Journal, Toronto

24: 455-504 (Oct.) 1933

Specific Prevention of Measles, Scarlet Fever and Diphtheria. J. G. Fitzgerald, Toronto.—p. 455.
Form of Canadian Medical Certificate of Death. T. E. Ashton, Toronto. —p. 465.
Tuberculous Infection in Two Thousand Four Hundred and Ninety-Two Persons, with Especial Reference to Younger Adult Age Groups. G. C. Brink, M. H. Brown, Toronto, and K. G. Gray, Mimico, Ont. —p. 471.
Federal Inspection of a Municipal Meat Supply. A. Wilson, Saskatoon, Sask.—p. 479.
Students' Health Service of Dalhousie University. H. G. Grant, Halifax, N. S.—p. 485.

Colorado Medicine, Denver

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The Food Factor in Allergy. G. Piness and H. Miller, Los Angeles.—p. 405.
Blood Pictures in Average Healthy Infants During the First Six Months. A. H. Washburn, Denver.—p. 413.
Humidity. R. S. Irwin, Denver.—p. 418.
Fifteen Years of Country Practice. W. B. Hardesty, Berthoud.—p. 420.
Pellagra in Colorado. W. S. Dennis, Denver.—p. 423.

Georgia Medical Association Journal, Atlanta

22: 361-402 (Oct.) 1933

The Challenge to the General Practitioner. J. C. Wall, Eastman.—p. 361.
Peptic Ulcer: Study of One Hundred Cases. J. C. Patterson, Cuthbert.—p. 370.
Syphilis of the Nervous System: Pathologic and Therapeutic Considerations. R. B. Wilson, Atlanta.—p. 372.
Surgery as an Aid in Treatment of Pulmonary Tuberculosis. B. H. Clifton, Atlanta.—p. 380.
Cancer of the Larynx. E. S. Wright, Atlanta.—p. 383.

Iowa State Medical Society Journal, Des Moines

23: 539-594 (Oct.) 1933

Tuberculosis in Ocular Disease. W. C. Finnoff, Denver.—p. 539.
Chronic Diarrhea: Its Differential Diagnosis. A. M. Gordon, Des Moines.—p. 544.
Nasal Allergy. H. I. McPherrin, Des Moines.—p. 549.
Allergy in Relation to Dermatology. L. J. Frank, Sioux City.—p. 554.
The Runnin' Ear. B. G. Dyer, Ames.—p. 558.
Conduct and Management of Labor by General Practitioner. T. H. Johnston, Spencer.—p. 562.
Malarial Therapy of Neurosyphilis. W. E. Ash, Council Bluffs.—p. 566.

Journal of Clinical Investigation, New York

12: 995-1194 (Nov.) 1933

Diurnal Rhythm in Water and Mineral Exchange. R. C. Manchester, Rochester, N. Y.—p. 995.
Effect of Splenic Contraction on the Formed Elements of the Blood in a Case of Anemia and Splenomegaly. D. K. Miller and C. P. Rhoads, New York.—p. 1009.
Proteins of Blood and Subcutaneous Lymph in Dogs. A. A. Weech, E. Goettsch and E. B. Reeves, New York.—p. 1021.
Permeability of Capillaries to Plasma Lipoids. Evelyn B. Man and J. P. Peters, New Haven, Conn.—p. 1031.
*Clinical Significance of Erythrocytic Sedimentation Test in Rheumatoid Arthritis. W. J. Stainsby and Edith E. Nicholls, New York.—p. 1041.
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Amino Nitrogen Changes of Blood in Nephritis. E. Kirk, New York. —p. 1091.
Formula and Nomogram for Estimation of Osmotic Pressure of Colloids from Albumin and Total Protein Concentrations of Human Blood Serums. H. S. Wells, J. B. Youmans and D. G. Miller, Jr., Nashville, Tenn.—p. 1103.
Herpetic Pharyngitis and Stomatitis: Report of Three Cases. P. H. Long, Baltimore.—p. 1119.
Studies on Nasal Secretions: I. Cellular Content of Nasal Secretions in Acute Disease of Respiratory Tract. P. H. Long, Eleanor A. Bliss and Harriet M. Carpenter, Baltimore.—p. 1127.
Magnesium Metabolism in Hyperparathyroidism. H. A. Bulger and Florence Gausmann, St. Louis.—p. 1135.
*Immunity in Diabetes: Influence of Diabetes on Development of Antibacterial Properties in the Blood. R. Richardson, Philadelphia.—p. 1143.
Calculation of Water Exchange: Note. L. W. Newburgh, F. H. Wiley and M. W. Johnston, Ann Arbor, Mich.—p. 1151.
Rate of Excretion of Urine in Subjects with Different Amounts of Renal Tissue. D. A. Rytand, San Francisco.—p. 1153.
Salt and Water in Treatment of Diabetic Acidosis. D. M. Kydd, New Haven, Conn.—p. 1169.

Sedimentation Test in Rheumatoid Arthritis.—The results of Stainsby and Nicholls' investigation of 597 cases indicate that the corrected sedimentation index (Rourke and Ernstene) is a reliable criterion of the activity or severity of the arthritic process at the time of testing and that any fundamental change in the clinical condition produces an immediate corresponding change in the sedimentation rate. Patients with a greater degree of involvement of the joint and a longer duration of the disease have higher sedimentation rates than those with less involvement of the joint and shorter duration of the disease. Considerable variation occurs, however, in individual cases. The phenomenon that the average sedimentation rate progressively increases with advancing age appears to be due primarily to the increasing accumulation of patients having severe arthritis in whom the disease began at some earlier age. From a study of seasonal variations in the sedimentation rate over a long period it was deduced that the rate was higher in winter than in summer, while spring and autumn occupied intermediate positions. No relationship was found between the sedimentation rate and the streptococcus agglutination reaction. The sedimentation test is a reliable measuring rod of the activity or severity of the arthritic process. By repeating this test at regular intervals, the progress of the patient may be determined. The sedimentation test provides a ready aid for correctly estimating the value of the treatment instituted.

Oxygenation of Concentrated Versus Normal Bloods.—The studies of Ray and his associates of the dissociation curves of normal and artificial polycythemic bloods show no difference in the tension of oxygen required to produce a given saturation. When these types of blood are oxygenated by the perfused lung, the normal blood becomes completely oxygenated while the concentrated blood is never fully saturated. Increasing the oxygen tension increases the saturation of the concentrated blood. The authors ascribe the difference between the two bloods to the greater rate at which hemoglobin in the polycythemic blood passes through the lungs, coupled with a delayed diffusion resulting from capillary dilatation.

Immunity in Diabetes.—Richardson states that complement in the blood of diabetic patients does not differ in amount

from that in the blood of nondiabetic patients. This is true whether or not infection is present. The antibacterial power of the blood of diabetic patients as measured by standard methods tends to be less than that of nondiabetic. Diabetic patients are less able than nondiabetic controls to form agglutinins following their inoculation with typhoid vaccine. From these studies the author concludes that any deficiency in the antibacterial reactions of the blood of the diabetic patient comes rather from impairment of the amboceptor than from any lack of the amount or the activity of the complement. This is true of both the natural amboceptor as shown by the bactericidal test and of the acquired amboceptor as shown by the formation of agglutinins.

Journal of General Physiology, Baltimore

17: 135-326 (Nov. 20) 1933. Partial Index

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Absorption of Pepsin by Crystalline Proteins. J. H. Northrop, Princeton, N. J.—p. 165.
Intermittent Stimulation by Light: II. Measurement of Critical Fusion Frequency for the Human Eye. S. Hecht, S. Shlaer and C. D. Verrijp, New York.—p. 237.
Id.: III. Relation Between Intensity and Critical Fusion Frequency for Different Retinal Locations. S. Hecht and C. D. Verrijp, New York.—p. 251.
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Journal of Immunology, Baltimore

25: 295-380 (Oct.) 1933

Studies on Tissue Reactions in Immunity: VII. Quantitative Measure of Skin Sensitivity. R. L. Kahn, Ann Arbor, Mich.—p. 295.
Id.: VIII. Quantitative Relation Between Skin Sensitivity and Serum Precipitins. R. L. Kahn, Ann Arbor, Mich.—p. 307.
Id.: IX. Desensitization of Rabbits Sensitized to Complex Proteins. R. L. Kahn, Ann Arbor, Mich.—p. 317.
Id.: X. Acquired Sensitivity of Rabbits to Different Organisms. R. L. Kahn, Ann Arbor, Mich.—p. 331.
Id.: XI. Comparative Response Following Intravenous and Intradermal Injections of Organisms. R. L. Kahn, Ann Arbor, Mich.—p. 339.
Id.: XII. Desensitization of Rabbits Sensitized to Organisms and Accompanying Phenomena. R. L. Kahn, Ann Arbor, Mich.—p. 347.
Id.: XIII. Natural Sensitivity of Rabbits to Different Organisms. R. L. Kahn, Ann Arbor, Mich.—p. 363.

Journal of Infectious Diseases, Chicago

53: 287-418 (Nov.-Dec.) 1933

The Herpes Encephalitis Problem: II. F. P. Gay and Margaret Holden, New York.—p. 287.
Neutralization of Poliomyelitis Virus by Serum of Normal Adults of Nashville, Tenn. N. P. Hudson, Chicago, and W. Litterer, Nashville, Tenn.—p. 304.
Precipitin Production in Rabbits Following Intramuscular Injection of Antigen Adsorbed by Aluminum Hydroxide. L. Hektoen and W. H. Welker, Chicago.—p. 309.
*Studies on Shwartzman Phenomenon: II. Hitherto Undemonstrated Antitoxins in Man. H. M. Klein, New York.—p. 312.
Experimental Pertussis. H. MacDonald and E. J. MacDonald, Evanston, Ill.—p. 328.
*Tetanus Toxoid in Prophylaxis Against Tetanus. D. H. Bergey and S. Etris, Philadelphia.—p. 331.
Relapsing Fever in California: I. Experimental Disease. G. E. Coleman, San Francisco.—p. 337.
Occurrence of Bacteria in Filtrable State in Active Bacteriophage: Studies in Bacterial Metabolism: CIV. A. I. Kendall and A. W. Walker, Chicago.—p. 355.
*Normal Flora of the Prepuberal Vagina. H. Pettit and C. H. Hitchcock, Philadelphia.—p. 372.
Purification of Diphtheria Toxoid. G. F. Leonard and A. Holm, New Brunswick, N. J.—p. 376.
Klebsiella Paralytica: New Pathogenic Bacterium from "Moose Disease." G. I. Wallace, A. R. Cahn and L. J. Thomas, Urbana, Ill.—p. 386.

Shwartzman Phenomenon: Heretofore Undemonstrated Antitoxins in Man.—Klein presents evidence that, in patients recovering from systemic gonococcic infections and from typhoid, specific antitoxins developed spontaneously, as demonstrated by the Shwartzman phenomenon. It appeared highly suggestive that in these patients recovery was related to antitoxin formation. Serum of certain patients with previous meningococcic infections and of certain controls was shown to possess meningococcus antitoxin. This was group specific. The capacity of antigonococcus serum to neutralize meningococcus reacting factors and of antimeningococcus serum to neutralize gonococcus reacting factors is further evidence of the biologic relationship between the gonococcus and the meningococcus. The author is extending these investigations to other diseases caused by bacteria possessing toxins potent in eliciting the Shwartzman phenomenon. His aim is to study whether spontaneous formation of antitoxin takes place. If further studies are fruitful, attempts should be made to confer immunity against this entire group of diseases, actively by prophylactic injections of toxoid and passively by the administration of immune serums to actively ill patients.

Prophylaxis Against Tetanus.—The experiments of Bergey and Etris on guinea-pigs with tetanus toxoid showed that three doses of 1 cc. each bring about a high degree of protection. From the results obtained in guinea-pigs, it is believed that human beings may also be protected against tetanus by the administration of several doses of toxoid. This method of protection obviates the hypersensitization against horse serum that may occur from passive immunization with tetanus antitoxin.

Normal Flora of the Prepuberal Vagina.—Pettit and Hitchcock made sixty cultural examinations of the vaginal flora of forty-six children between the ages of 14 months and 11 years. The majority of these cultures were obtained with sterile cotton-tipped applicators. The swab was rolled gently on a portion of a 5 per cent rabbit blood-beef infusion agar plate of p_H 7.4; after this a smear was made on a clean glass slide. The plates were at room temperature for from fifteen to twenty minutes until they could reach the laboratory incubator. Sterile glass spreaders were used to distribute the organisms over the surface of the agar. Incubation was at 37.5 C. Smears were stained by Gram's method. The authors' studies show that the flora is predominantly diphtheroid in character. Gram-positive cocci, such as nonhemolytic streptococci and non-pigment-forming staphylococci, are present less frequently and in smaller numbers. Organisms of the intestinal flora seldom if ever occur in healthy children, though in severely ill patients there is a distinct tendency for them, together with Streptococcus aureus, to overgrow the normally occurring flora.

Maine Medical Journal, Portland

24: 209-228 (Nov.) 1933

Radium Treatment of Uterine Carcinoma. A. P. Leighton, Jr., Portland.—p. 210.
Endocervicitis. H. M. Goodwin, Bangor.—p. 215.

Minnesota Medicine, St. Paul

16: 661-714 (Nov.) 1933

Undulant Fever (Brucellíasis). W. M. Simpson, Dayton, Ohio.—p. 661.
Rôle of Vitamins in Nutrition. G. O. Burr, Minneapolis.—p. 668.
Skin Manifestations of Avitaminosis. S. E. Sweitzer, Minneapolis.—p. 670.
Eye Manifestations of Avitaminosis. D. L. Tilderquist, Duluth.—p. 675.
Systemic Manifestations of Avitaminosis. H. Oerting, St. Paul.—p. 679.
Treatment of Malnutrition in Adults. M. Barron, Minneapolis.—p. 681.
Vitamin Deficiency in Childhood. P. C. Jeans, Iowa City.—p. 688.
Observations on Deep Q Wave in Lead III of Electrocardiogram. J. F. Borg, St. Paul.—p. 694.
Calcium Deficiency Associated with Functional Gastro-Intestinal Disturbances in Adults. E. L. Gardner, Minneapolis.—p. 698.

New Jersey Medical Society Journal, Orange

30: 689-750 (Oct.) 1933

Injuries of the Infant During Delivery. P. B. Bland, Philadelphia.—p. 695.
New Method for Relieving Prostatic Obstruction. V. P. Butler, Jersey City.—p. 701.
Methods for Improving Results in Cancer of Large Intestine and Rectum. V. Farmer, Hackensack.—p. 704.
Pneumothorax the Treatment of Choice in Pulmonary Tuberculosis. M. J. Fine, Newark.—p. 706.
Metastatic Lateral Sinus Thrombosis. H. Z. Goldstein, Newark.—p. 716.
Acetarsone (Stovarsol) in Treatment of Congenital Syphilis. N. B. Heller, Newark.—p. 718.
Treatment of Infantile Eczema. B. M. James, Newark.—p. 721.
Dietetics in Gastro-Intestinal Disease. V. Knapp, Asbury Park.—p. 724.
Medicolegal Aspects of Bone Injury. M. Kummel, Newark.—p. 728.
Surgery of Vegetative Nervous System. A. Strelinger, Elizabeth.—p. 739.
Perforated Gastric Ulcer. J. A. Visconti, Hoboken.—p. 743.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Journal of Radiology, London

6: 577-640 (Oct.) 1933

Duodenal Diverticula: Commentary and Report of Six Cases. C. D. Costello.—p. 577.
Evaluation of "Depth Doses" of Gamma and Roentgen Rays. W. J. Rees and L. H. Clark.—p. 588.
Three Problems of Gamma Ray Therapy: Notes. W. V. Mayneord.—p. 598.
Radiosensitivity of Nondividing Cell. J. C. Mottram.—p. 615.

British Journal of Tuberculosis, London

27: 147-194 (Oct.) 1933

Tuberculosis in Canada. H. Rolleston.—p. 147.
Closure of Cavities in Pulmonary Tuberculosis. B. Hudson and F. H. Hunnard.—p. 150.
Retrospect of Twenty Years in Tuberculosis Service. A. C. Watkins.—p. 155.
Pulmonary Tuberculosis of Bovine Origin: Critical Survey. W. M. Cumming.—p. 159.
Tuberculosis Movement in the United States. K. Emerson.—p. 162.

British Medical Journal, London

2: 717-766 (Oct. 21) 1933

Clinical Science. T. Lewis.—p. 717.
Puerperal Fever: Its Etiology and Prevention. L. Colebrook.—p. 723.
Diagnosis of Puerperal Sepsis. L. C. Rivett.—p. 726.
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Control of School Myopia. A. Sorsby.—p. 730.
Maternal Mortality in New Zealand. T. L. Paget.—p. 739.

2: 767-806 (Oct. 28) 1933

Surgical Diseases of Biliary Tract. D. P. D. Wilkie.—p. 767.
*Some Experiences of Sympathectomy in Anterior Poliomyelitis. E. D. Telford and J. S. B. Stopford.—p. 770.
*Bilateral First Thoracic Ganglionectomy in Two Cases of Parkinson's Syndrome. G. Harrower and K. C. Ghosh.—p. 772.
Fractures of the Spine: Treatment and Transportation. W. S. Haughton.—p. 774.
Hemangioma of the Spine. F. S. Heaney and P. H. Whitaker.—p. 775.
"March Foot": Case. H. Dodd.—p. 776.
Role of Fusion Operations as Applied to the Hip Joint. G. R. Girdlestone.—p. 777.
Chloroform Capsules During Labor. L. C. Rivett.—p. 778.

Sympathectomy in Anterior Poliomyelitis.—The result in Telford and Stopford's three experimental cases of total paralysis of one or both lower extremities shows that sympathectomy has been of great benefit to the patients. During the whole winter their limbs have remained warm and there have been no distressing chilblains or a period of incapacity for school or work. They are most enthusiastic about their greatly increased comfort and happiness, even in the coldest weather; the warmth is most striking and in a paralyzed limb seems quite unnatural. The color has improved in all, but when the patient has been standing for a time there is still a trace of cyanosis, mostly in the calf, showing that in the erect position there is still some lag in the venous return. Although the number of cases is small and but one winter has passed since the operation, the authors think it likely that sympathectomy will prove of real value in patients who have had anterior poliomyelitis and who are subject to recurrent chilblains and ulceration. They maintain that if ganglionectomy is adequately done there is no question that the result is complete and permanent. By now there is ample support for this contention in the literature of ganglionectomy in both man and animals.

Thoracic Ganglionectomy in Parkinson's Syndrome.—Harrower and Ghosh removed the first thoracic ganglion in two cases of Parkinson's syndrome. The operation effected an improvement much more marked in the woman than in the man, but neither subject was improved to such an extent as to become a useful member of the community. The condition in the woman was not of long duration. She was improved to such an extent that she was able to attend to her own wants. The results point to the fact that the heart is intrinsically controlled. In the past, the sympathetic system has been blamed for all sorts of ills, but, judging from the results of sympathectomies in various parts of the body, the action of the sympathetic system is a subsidiary one in the normal human economy. When the sympathetic nerve is causing spasm in disease conditions, as in carcinoma of the bladder or Raynaud's disease, section of the nerves involved has a beneficial result, but in the normal economy the sympathetic nerves, like the appendix or gallbladder, can be dispensed with.

East African Medical Journal, Nairobi

10: 189-220 (Oct.) 1933

*Vitamin A and Infection: Review of Recent Work. F. W. Fox.—p. 190.
Observation on Mosquito Breeding in Pawpaw Trees. J. E. Mountjoy.—p. 214.

Vitamin A and Infection.—Fox states that an animal's resistance to infection depends among other things on an adequate supply of vitamins in the diet. While other vitamins take some share in maintaining this resistance, the part played by vitamin A is unquestionably of greatest importance; it is best regarded not so much as a positive anti-infective agent, indiscriminate in its action, but rather as a constituent in the diet a deficiency of which leads to increased susceptibility to infection. Regarding the important practical question as to the amount of the vitamin that is required, it would appear that: 1. The rarity with which the more characteristic signs of vitamin A deficiency, such as xerophthalmia and night blindness, are encountered among civilized races suggests that the minimal requirements are probably small. 2. There is no doubt that people in different parts of the world are living on diets which are dangerously near and sometimes temporarily below this minimal requirement. 3. The body possesses considerable powers of storing this vitamin and hence the person can if necessary be comparatively independent of the immediate supply in the food. On the other hand, allowance should be made for the fact that in some persons this absorbing or storing capacity is curiously defective. 4. Whether the diet often falls short of the optimal requirement for the maintenance of full health and vigor is at present a debatable question. The fact that the more generally recognized symptoms disappear so rapidly when treated with small amounts of the vitamin, together with a certain amount of direct evidence that the use of large amounts does not lead to the development of unusual resistance to the common infections, makes it probable that no more of this substance is required than is provided by a well chosen diet containing a moderate amount of fresh food. 5. Such evidence as is at present available indicates that no dramatic demands are made on the vitamin reserves during the course of infectious disease, but the possible value of vitamin A therapy calls for the fullest investigation. The manner in which vitamin A influences resistance to infection is but little understood.

Edinburgh Medical Journal

40: 445-496 (Oct.) 1933

Study of Lymphogranulomas. J. Fraser and E. C. Mekie.—p. 445.
Clinical Studies in Pathology of Bone. D. M. Greig.—p. 482.

Journal of Neurology and Psychopathology, London

14: 97-192 (Oct.) 1933

Neurologic Abnormalities: Their Occurrence and Significance as Illustrated by an Examination of Five Hundred Mental Defectives. R. G. Gordon, R. M. Norman and R. J. A. Berry.—p. 97.
Papilloma Choroideum with Diffuse Central Nervous System Metastases. G. W. Hall and T. L. Fentress.—p. 108.
*Propriety of Diagnostic Lumbar Puncture in Intracranial Hypertension. W. F. Schaller.—p. 116.
Military Aspects of Narcolepsy: Remarks on Pathogenesis of Narcolepsy and on Fatigue. M. Levin.—p. 124.
Some Relationships Between Personality and Body Chemistry. G. J. Rich.—p. 132.

Diagnostic Lumbar Puncture in Intracranial Hypertension.—Schaller presents clinical and experimental evidence to support the contention that there is no proof of sudden wedging or movement of the contents of the posterior fossa into the foramen magnum following spinal tap in open craniospinal pathways, even in the presence of increased intracranial pressure. There is, however, reason to believe that so-called herniation is an expression of general brain swelling and edema and may be due to changes in intracranial pressure and vasomotor paralysis and shock from various causes. Sudden and excessive withdrawal of fluid by spinal tap may produce such edema, as well as similar withdrawal of fluid from other parts of the cerebrospinal fluid system. Of the four deaths in the

series, two can be excluded as due to properly performed diagnostic punctures; two may or may not have been determined by diagnostic punctures. The incidence of postpuncture accidents is greater in supratentorial than infratentorial tumors, and the incidence of sudden death is greatest in vascular lesions. The author admits that even a properly performed lumbar puncture may in exceptional cases hasten the course of a prognostically serious and often hopeless pathologic condition found in intracranial hypertension, but this is not a just criterion by which to designate the procedure as unsafe; rather, the accumulated experience of late years would justify the opinion that when properly done the procedure is reasonably safe because of the low mortality—only two reported cases (Putnam) in recent years—and justifiably indicated because of the valuable diagnostic information it affords.

Japanese Journal of Gastroenterology, Kyoto

5: 79-114 (Oct.) 1933

*Clinical and Experimental Study on Dietetic Therapy of Disease of Gallstone. S. Saiki.—p. 79.
Experimental Studies in Sodium Chloride Metabolism: Report IV. Metabolism of Several Diuretics. H. Saito.—p. 85.
Effect of Injection of Glucose on Green Bile. K. Kanasaki.—p. 91.
Experimental Studies in Absorption of Pigment by Intestines: Report I. S. Kawawaki.—p. 101.
Id.: Report II. Behavior of Lymphatic Vessels. S. Kawawaki.—p. 108.
Gastric Juice of Natives of Japanese South Sea Island: Report I. Gastric Juice of Healthy Persons. K. Nagasaki.—p. 111.

Dietetic Therapy of Gallstone Disease.—Saiki produced calculi in the bile duct, the kidney and the urinary bladder of animals fed a deficient vitamin D diet. He corroborates this fact clinically by presenting a case of late rickets complicated with gallstone. The patient received a diet deficient in vitamin D. The gallstone was experimentally dissolved in vivo by adding an adequate amount of vitamin D to the diet. Thus it was shown definitely that vitamin D is the most important nutritive element which is kept in closest connection with the therapy and the prevention of gallstones.

Presse Médicale, Paris

41: 2077-2092 (Dec. 23) 1933

Generalized and Dissociated Types of Recklinghausen's Disease (Neuro-Ectodermatosis). L. Cornil, P. Kissel, A. Beau and J. Alliez.—p. 2077.
Difficulties of Extensive Gastrectomy and Means of Overcoming Them. S. Judine.—p. 2079.
Observations of Exudative Tuberculosis Treated with Jousset's Serum. J. Longchampt.—p. 2081.
*Flocculation Test Performed with Antigen, for Diagnosis of Syphilis. A. Michailoff.—p. 2084.
Vichy Water in Therapy of Acute Scarlatinal Nephritis. A. Strué, E. Cocias and I. Schwartz.—p. 2086.

Flocculation Test with Antigen for Diagnosis of Syphilis.—Michailoff used white mastic and an antigen similar to that of Bordet-Ruelens with the incorporation of brain of a guinea-pig. His antigen is prepared in the following manner: One hundred Gm. of heart of calf, well cleaned and chopped, is fixed in 125 cc. of a 95 per cent solution of alcohol for from twelve to fourteen hours. After filtration the alcohol is replaced by 200 cc. of pure acetone. To this mixture, 2 Gm. of small cut pieces of the brain of a guinea-pig is added. This is kept for six hours at ordinary room temperature, and the acetone removed by filtration is replaced. Four hours later another filtration is done, the acetone is left to evaporate at the temperature of the laboratory and the filtrate is weighed. To each gram of tissue, 2 cc. of a 95 per cent solution of alcohol is added and the extraction is continued for ten days. After filtration, an amber-yellow liquid, the antigen, is obtained, which can be preserved for years. The alcoholic solution of mastic is prepared by dissolving 1 Gm. of mastic in 10 cc. of absolute alcohol. This is filtrated after twenty-four hours. Of this solution, 1 cc. is added to 10 cc. of antigen. Usually, the antigen is diluted 1:20 with 8.5 per cent solution of sodium chloride, of which dilution 0.25 cc. is employed for the reaction. The author's flocculation test requires two test tubes and if the complement and the antigen are well titrated and the serum inactivated the test is performed in fifteen minutes. The first test tube contains 0.25 cc. of antigen, 0.1 cc. of inactivated serum, 2 units of complement and the necessary amount of physiologic solution of sodium chloride to bring up the volume of mixture to 0.75 cc. In the second or control tube are placed the same ingredients with the exception of antigen. These two test tubes are gently shaken for four minutes while the formation of air bubbles is avoided. Shaking the tubes less or more time will produce a false positive reaction or an incomplete fixation of complement. By leaving the tubes at rest for twenty-four hours, gross flocculation is shown in positive serums. Hemolysis is obtained more rapidly than in the Bordet-Wassermann test and the results are more distinct and more visible. The slightly anticomplementophil serums do not impede the reaction. The strongly anticomplementophil serums can be tested by using four or six test tubes with increasing amounts of complement. The author made 2,060 tests based on this simple method and compares its results with those obtained by the Bordet-Wassermann reaction and Kahn's test. In comparing the results obtained by his test, the author claims that it did not show a single case of false positive reaction and that it perhaps failed in three cases in which the Kahn test failed also, while the Kahn test showed in eight cases and the Bordet-Wassermann in sixteen cases a false positive reaction. On the other hand, the Kahn test failed in nine cases, was weaker than the author's test in thirty-five and was stronger in twenty-one. The Bordet-Wassermann reaction failed in fifty-seven cases and was weaker in eighty-two when compared with the Kahn and the author's tests. Furthermore, during the author's investigations it appeared clear that his as well as the Kahn test is positive earlier than the Bordet-Wassermann reaction, and that they become negative much later in the cases treated.

Policlinico, Rome

40: 1999-2038 (Dec. 18) 1933. Practical Section

Simple Chronic Osteomyelitis of Mandible with Unerupted Tooth Aggravated by Extraction of Third Upper Molar. G. Baggio.—p. 1999.
*Flexion Contraction of Elbow as Sign of Meningeal Inflammation. R. Almansi.—p. 2003.
Aleukemic Lymphadenosis: Case. G. Fabri.—p. 2006.

Elbow Contraction as Sign of Meningeal Inflammation.—Almansi experimented with the following technic on thirty-seven patients suffering from tuberculous, cerebrospinal, epidemic, syphilitic and parotitic meningitis and meningism: The patient is placed in dorsal decubitus, the arm extended backward and as high as possible. The patient's wrist and elbow are supported by an assistant while the author, standing on the other side, bends the patient's neck forward and a little to the opposite side and fixes the thorax. Afterward the positions are inverted and the other arm is examined. If the result is positive there is a flexion of the forearm corresponding usually in intensity to the other signs of contraction. By analogy to the denomination used by Kernig, the author calls this sign "flexion contraction of the elbow." Patients recovering from cerebrospinal meningitis when subjected to this technic evince a pain localized along the median nerve, evidence of a neuritis which otherwise cannot be revealed. In five cases the reaction was negative, whereas in all other cases there was a unilateral or a bilateral positive reaction. Comparison with the Kernig and Brudzinski signs shows that elbow contraction may be missing when the former are present, that it may be present when they are missing, or that both may be found in varying intensity. Comparisons made with Brudzinski's and Northrup's sign on the upper extremities clearly demonstrate a greater incidence of elbow contraction. The author obtained a positive response in infants from 2 to 4 months of age; this is significant in consideration of how little value is attributed to signs of hypertonia in early infancy. In opposition to Kernig's sign, elbow contraction is more frequently present in tuberculous meningitis forms than in epidemic cerebrospinal forms. Elbow contraction is generally missing in paretic extremities; its absence, however, does not necessarily imply paresis of the limb. Elbow contraction was found in one case of generalized arteriosclerosis of the small cerebral arteries. Unilateral elbow contraction was encountered in eleven cases. The Kernig and Brudzinski signs are found unilaterally in cases of localized lesions of the brain. The author maintains that flexion contraction does not have a pathogenesis different from that which conditions the Brudzinski and Kernig signs. Brudzinski explains the pathogenesis of his sign by referring it to

hypertonia or the spastic state. The origin of this hypertonia has not yet been determined, although it seems to be radicular. The author maintains that his sign is a uniregional or multiregional contraction that involves the physiologically predominating muscular groups.

Día Médico, Buenos Aires

6: 409-428 (Dec. 11) 1933

*Curable Cutaneous Induration of the New-Born: Case. C. P. Montagna.—p. 415.
Gastroscopy. J. Piñeiro Sorondo.—p. 418.

Curable Cutaneous Induration of the New-Born.—Montagna says that curable cutaneous induration of the newborn is a syndrome that generally appears in children who, having been born suffering from blue asphyxia, are submitted to various maneuvers that they may be reanimated. Labor in these cases is difficult and prolonged, and sometimes the application of forceps or the performance of a cesarean section is necessary to end it. The three principal etiologic factors of the condition are: the predisposing causes (constitution of the fat, endocrine and humoral disturbances and principally hypercholesterolemia), the obstetric trauma and the drop of temperature of the infant caused by the reanimating maneuvers. The pathogenesis is still unknown. It is believed that there is necrosis of the subcutaneous fat. Prognosis is good. The condition follows a benign evolution to spontaneous recovery. Massages, frictions and inunctions should be avoided. The author reports the case of an infant who was observed from 1 to 5 months of age. From the type of the lesions, the etiology (the child had been born in blue asphyxia and had been submitted to reanimating maneuvers) and the evolution of the condition to spontaneous recovery, the author concludes that his case was a typical case of syndrome of curable cutaneous induration.

Chirurg, Berlin

5: 929-982 (Dec. 15) 1933

*Results After Cholecystostomy. H. Dieterich.—p. 929.
Splitting of Bone As Method of Treatment of Localized Osteitis Fibrosa. E. Bertel.—p. 932.
Treatment of Intoxication Due to Roentgen Therapy. H. Gissel.—p. 936.
Problem of Intestinal Stricture. K. Platschik.—p. 938.
Reflex Anuria. R. Stohr.—p. 943.
Primary Sarcoma of Stomach. W. Schultz.—p. 947.

Results After Cholecystostomy.—Dieterich reviews 384 clinical cases of cholecystostomy performed from 1900 to 1931 at the surgical clinic of the University of Giessen. In typical cholecystostomy, the gallbladder was exposed, opened at the neck, cleansed, drained and packed. Atypical cholecystostomy was chiefly used in pericholecystic abscesses. Cholecystostomy was the operation of choice in 128 cases of cholelithiasis and acute cholecystitis, in 115 cases of acute and chronic empyema of the gallbladder and in 29 cases of pericholecystic abscess. The atrophied gallbladder constituted the indication for operation thirty times, catarrhal cholecystitis twenty five times, carcinoma of the gallbladder twenty-two times, and dropsy eighteen times. Of the 384 patients, 33 died immediately after the operation, 5 shortly after owing to cholecystitis with stones, 8 owing to carcinoma and 4 owing to pancreatic necrosis. In forty-five other cases the primary disease was responsible for death rather than the cholecystostomy. Few complications worthy of note were observed after operation. In only 8 of the 384 cases did the fistula fail to close spontaneously, necessitating secondary cholecystectomy. Consequently, this slight incidence cannot be regarded as a contraindication for cholecystostomy. In 334 cholecystostomies there were 45 postoperative recurrences, of which 35 necessitated cholecystectomy, 8 cholecystectomy together with choledochotomy and 1 choledochotomy. Thus the gallbladder rather than the common bile duct was the seat of the disease. Only two cases out of thirty-one showed any recurrence of gallstones; in general, stones seldom recur after cholecystostomy. When the bladder was being drained of stones in atypical cholecystostomy, some were left behind because of complications preventing their recognition. The author concludes that cholecystostomy shows satisfactory results in carefully selected cases. This operation is justified when cholecystectomy, which is always more desirable, offers technical difficulties or when the general condition of the patient necessitates rapid termination of the operation. In the latter event, empyema of the gallbladder with and without complications in advanced age would be the main indication. With its inherent defects, cholecystostomy will always be only a makeshift, which should not, however, be completely rejected.

Dermatologische Wochenschrift, Leipzig

97: 1779-1806 (Dec. 23) 1933

*Clinical Aspects and Pathologic Histology of Endocrine Glands in Sclerodermia. J. Follmann and B. Balló.—p. 1779.
Quantitative Turbidity Reaction as Indicator of Value of Therapy of Syphilis. C. Stern.—p. 1788.
*Liver Therapy of Psoriasis. T. Grüneberg.—p. 1793.

Sclerodermia.—Follmann and Balló give detailed clinical histories of two patients with sclerodermia and review 200 cases from the literature. This review shows that sclerodermia may develop in patients of every age. The aspects of the disease vary so greatly that a uniform etiology is hardly possible, but it is worthy of note that in 32 per cent of the cases the anamnesis reveals vasolability of the extremities, acroasphyxia and cold as promoting factors (Raynaud's syndrome). Exposure to cold is often a causal factor of sclerodermia, but the influence of heat also may be a cause, although it is extremely rare. Injuries of the thighs, multiple fractures, and traumas of the jaws likewise have been followed by sclerodermia. In some instances the sclerodermia seems to follow the course of the nerves. Functional changes in the sympathetic nervous system and consequent functional disturbances in the endocrine system have often been considered pathogenic factors. But the observations are not uniform, for hyperfunction as well as hypofunction of the thyroid, hypofunction of the hypophysis, suprarenals and ovaries and pluriglandular insufficiencies have been observed. Moreover, cases in which endocrine disorders are absent are just as frequent as those in which they are present. The studies on the nervous system give no definite information, for the sympathetic as well as the parasympathetic may show an increased irritability. A review of the therapeutic aspects reveals improvement after various treatments, but most frequently after organotherapy, particularly with thyroid extract. Another factor that makes the estimation of sclerodermia difficult is that it passes through several stages. On the basis of a consideration of the entire course of the disorder, the authors conclude that the disorder begins always as a disturbance of the skin, independent of a disease of the internal organs, although a predisposition may exist. The loss of the elasticity of the connective tissue and of its adaptability to the functional requirements explains impairment of the circulation, not only as the result of the lack of elasticity of the skin but also because of pressure. The organism makes efforts to compensate for this, but, since impairment of the circulation also affects the vasomotor nerves, it becomes understandable why in the first stages of the disorder the sympathetic nervous system is in a state of hypersensitivity. A little later, when the nervous system is no longer able to control the function of the skin, the organism must exert the endocrine system because it dominates the sympathetic. On this basis it must be assumed that during these beginning stages the nervous and endocrine systems still may exert an influence on the process, but after that an improvement can hardly be expected. In resorting to endocrine therapy the local measures should not be neglected, and eventually parenteral protein therapy may be tried.

Liver Therapy of Psoriasis.—Reports about favorable effects of liver therapy in psoriasis induced Grüneberg to try this treatment. Injections of liver extract were given every second day, and the patients took liver by mouth in the form either of fresh liver or of liver extract. In psoriatic patients, liver therapy decreases the tendency to relapse; but it also influences the existing cutaneous manifestations. It seems that the therapeutic effect is better if the patient is exposed to the influence of light, but the exposure should not be too severe. In order to compensate for the deficiency of sunlight in the big city, particularly during the winter months, the patients were given quartz lamp irradiations; but the doses were smaller than is usually the case so as to avoid irritation. In spite of the fact that the liver therapy occasionally produces surpris-

ingly good results, the author admits that, aside from a reduction in the tendency to relapse, it accomplishes, on the whole, no more than the customary treatments; for liver therapy may fail as well as the other treatments, and as a rule it does not make the application of ointments unnecessary. The mechanism of liver action, which may involve several components, is not yet clear, but it is possible that an increase in the sulphur or glutathione content of the skin is an essential factor.

Deutsche medizinische Wochenschrift, Leipzig

59: 1883-1914 (Dec. 22) 1933

Functional Behavior of Eye in Age and Death. W. Wegner.—p. 1883.
*Postoperative Incisional Hernias. H. Flörcken and E. Kobel.—p. 1886.
Improvement of Metranoikter. Kubig.—p. 1888.
Rigidity of Cervix Following Operation for Fibromyoma: Indication for Cesarean Section. M. Mátyás.—p. 1890.
Demonstration of Spirochaeta Pallida in Neurosyphilis. P. Syring.—p. 1891.
Treatment of Leukorrhea. W. Benthin.—p. 1892.
Vomiting of Pregnancy and Its Treatment. E. Schwab.—p. 1897.

Postoperative Incisional Hernias.—Flörcken and Kobel report observations in 158 cases of incisional hernias, of which 96 could be reexamined. They show that, although the diagnosis is comparatively simple, erroneous diagnoses do occur. The presence in the scar of hard, pressure sensitive areas or of protrusions, caused by paralysis of portions of the abdominal muscles following cutting of motor nerves, may cause such mistaken diagnoses. The authors discuss the incidence of incisional hernias and state that in many of the cases observed by them drainage and packing had been necessary, while in others peritonitis or suppurations had existed. In only four cases was it certain that the operative wound had healed by first intention. Most incisional hernias develop during the first year after the operation. The authors consider operative repair indicated (1) in all small incisional hernias, because without operative intervention they have a tendency to become larger and the operation is usually quite simple, and (2) in the larger hernias that are accompanied by symptoms of incarceration and digestive and other disturbances. Operative treatment is contraindicated in unusually large hernias, in which closure of the defect is not likely. If the patient is obese, a reducing treatment may be instituted, for after that the repair of the hernia frequently becomes possible. Operative treatment is also inadvisable in patients with circulatory, respiratory or renal disturbances. In doubtful cases an electrocardiogram should be taken. Diabetes is a contraindication only when it is severe. Since complete relaxation of the abdominal walls is an essential requirement for the operative repair of incisional hernias, the authors consider spinal the most desirable form of anesthesia. They recommend as the best treatment the opening and removal of the hernial sac and the repair of the different layers of the abdominal walls. In suitable cases, free transplantation of the fascia may be resorted to, but the use of foreign bodies, such as silver wire netting, should be dispensed with as much as possible, because they readily lead to suppurations or the formation of fistulas. Later examinations on ninety-six patients revealed that fourteen had had a relapse. In nine of these the operation had caused an exacerbation, but the other five declared that they were free from difficulties and satisfied with the results of the treatment.

Deutsche Zeitschrift für Chirurgie, Berlin

242: 1-76 (Nov. 23) 1933

*Cerebral Compression in Blunt Injuries of Head. B. Karitzky.—p. 1.
Prevention of Malarial Infection in Transfusion of Blood. V. Ackermann and A. Filatov.—p. 27.
Symptomatology of Recent and Habitual Adduction-Supination Distortion of Foot. E. Dehne.—p. 40.
*Occurrence of Tetanus After Timely Administration of Tetanus Antitoxin. H. Hanke.—p. 62.

Cerebral Compression in Blunt Injuries of Head.—According to Karitzky, compression of the brain in injuries of the head may be due to (1) a depressed fracture, (2) intracranial bleeding and (3) edema of the brain. A depressed fracture always produces a local pressure on the brain tissue and must therefore be treated by lifting the fragment. In the case of bleeding the local signs of compression are soon superseded by the signs of general compression of the brain. Every head injury should be examined roentgenologically to avoid diagnostic errors. The subjective symptoms and clinical signs in concussion of the brain depend on the swelling of the brain resulting from trauma to the tissue of the brain. The author views the increase of pressure within the spinal canal as a functional compensatory phenomenon and does not favor interfering with it. Increase in the intracranial pressure is followed by increase in the intraspinal pressure. The latter has a tendency to lift the medulla from the bony base of the skull. The compression of the brain tissue against the unyielding dome of the skull is at first compensated by flattening out of the convolutions, later by diminution in the amount of the cerebrospinal fluid. For this reason spinal puncture is contraindicated in recent injuries to the brain. It is reserved for the treatment of late results of concussion in which there is no tendency to progression of the lesions. Subdural hemorrhage is treated by trephining and removal of the hematoma. The author's attitude toward the treatment of edema of the brain is conservative. He is not impressed with the results of osmotherapy as advocated by Weed and McKibben. Dehydration following the intravenous injection of hypertonic solution was demonstrated to be of short duration in experiments on animals, its effect not lasting over one hour. This is in part due to the fact that, after a certain amount of shrinkage of the brain volume through loss of water takes place, the sodium and chlorine ions of the hypertonic solution now lodged in the brain cells produce in their turn reabsorption of lost fluid. The treatment of prolapsed tissue of the brain is limited to prevention of further damage to it. With the disappearance of the general edema, the prolapse becomes automatically reduced.

Tetanus After Administration of Tetanus Antitoxin.—Hanke reports two cases in which, in spite of proper treatment of the traumatic lesion and timely administration of a proper dose of tetanus antitoxin, tetanus developed in one patient on the eighth and in the other on the ninth day. The tetanus was severe and terminated fatally. Attention is called to Mosbacher's collected statistics in which 2,032 cases were reported in which tetanus developed in spite of the prophylactic injection of antitoxin. In only 745 of this number was the injection given during the first twelve hours. The mortality in the latter group was 209, or 28 per cent. The explanation is furnished by the observation of Dehne and of F. Hamburger that the antitoxin content of the blood is suddenly diminished on the seventh or eighth day after its administration. If the wound is not healed by that time, reactivation of the infection may take place in the absence of sufficient antitoxin content in the blood to protect the organism. The author therefore recommends the second administration of a prophylactic dose of antitoxin on the sixth or seventh day. This is particularly indicated in cases in which the wound has failed to heal, as well as in cases in which bacteria persist in the depth of the wound. Compound, badly soiled fractures and wounds with deep pockets are particularly dangerous. The possibility of anaphylactic reaction must be kept in mind and met by proper measures, such as a change of serum, the use of a highly potent serum with small albumin content, and desensitizing methods.

Norsk Magasin for Lægevidenskapen, Oslo

94: 1305-1408 (Dec.) 1933

Investigations on Utilization of Hardened Whale Fat with Low Melting Point in Human Intestine. K. Hansen, H. T. Offerdahl and B. Eriksen.—p. 1305.
*New Contributions to Pathologic Anatomy of Traumatic Hemorrhages of Brain and Medicolegal Significance. O. Berner.—p. 1318.
Development of Diphtheria Epidemic: Epidemiologic Study of Efficacy of Prophylaxis Against Diphtheria. S. Oftedal.—p. 1337.
Remarks on Atmospheric Pathogenesis. A. Magelssen.—p. 1351.

Pathology of Traumatic Hemorrhages of Brain.—Berner's forty-two cases of traumatic hemorrhages of the brain since 1930 consist of twenty-five with macroscopic hemorrhages in the fourth ventricle, four with hemorrhages in the central ganglions or immediate vicinity, nine with microscopic hemorrhages in the fourth ventricle and four without certain hemorrhages in the fourth ventricle (possibly because the direct cause of death was not the trauma of the head). He asserts that the place of predilection for traumatic hemorrhages at the base of the fourth ventricle is in front of the acoustic striae.